
This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

GoogleTM books

<https://books.google.com>

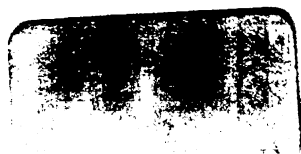


A

755,636

PROPERTY OF
*University of
Michigan
Libraries*
1817

ARTES SCIENTIA VERITAS



5.17
5/1/22
21346 10

THE CIVIL AIR WAR

by
Charles
C. G. GREY

founder and late editor of "The Aeroplane"

To T. S. Denham

a small reminder

from C. G. Grey



published by

THE HARBOROUGH PUBLISHING COMPANY LTD.

ALLEN HOUSE, NEWARKE STREET, LEICESTER

Sole distributors to the Book Trade
HORACE MARSHALL & SONS LTD.
TEMPLE HOUSE, TALLIS STREET, E.C.4

Printed in England by
ASH AND COMPANY

8 HOLYROOD STREET, S.E.1

1945

TL

553

G. C. G.

Mr. C. G. Grey has had a long experience in the field of Aeronautical literature. In 1909 he founded *The Aero*, and left this journal to found *The Aeroplane*, which he continued to edit until 1939.

Since 1939 he has been Air Correspondent to the *Edinburgh Evening News*, *The Yorkshire Evening News* and *The Lancashire Daily Post*. He has the following books to his credit :—

<i>Flying, the Why and Wherefor</i>	.....	.....	1909
<i>Tales of the Flying Services</i>	.....	.....	1915
<i>A History of the Air Ministry</i>	.....	.....	1940
<i>How an Aeroplane Flies</i>	.....	.....	1941
<i>British Fighter Planes</i>	.....	.....	1941
<i>Bombers</i>	.....	.....	1941
<i>The History of Combat Airplanes.</i> (Cabot Memorial Treatise for Norwich University, Vermont, U.S.A.)	.....	.....	1942
<i>Sea Flyers</i>	.....	.....	1942
<i>The Luftwaffe</i>	.....	.....	1943

CONTENTS

Digitized by Google

THE CIVIL AIR WAR

FOREWORD

This book is called "The Civil Air War" (a) because we have not conquered the air by a long way, and are likely to be at war with it for years to come before we make flying safe, (b) because there is a very fine war going on, and likely to go on for a long time, between the Air Transport interests of all the nations which can afford to run air lines, whether by independent enterprise, by subsidised companies as "chosen instruments," public corporations, or by frankly National-Socialist State-owned organisations, and (c) because we have on hand a fierce private civil war between all the transport interests in this country—sea, land and air, commercial, bureaucratic and political.

Somewhere early in 1943, when even the lowest order of intelligence could see that Germany was being beaten, folk began talking about Civil Aviation. One heard the old platitude, so well-known in early 1918 (and probably equally so before the end of the First and then of the Second Punic Wars) that just as in time of Peace one must prepare for War so in time of War one must prepare for Peace. And, because everybody has heard so much about the R.A.F. and has felt so much from the Luftwaffe, Civil Aviation has been one of the commonest subjects of post-war talks and of post-war planning.

Those of us who before 1914, and again before 1939, had urged preparation for War were not much impressed by all this talking and planning about Peace. We had been denounced in those days as warmongers by many of the leading peace-planners. Our answer was that if they had let us prepare for War there would have been no need to prepare for Peace. Moreover, along a different line, some of us, very early in this war, had our own ideas of Air Transport. And we knew that none of the war-time planning for Peace in 1917 ever came into being after 1918.

One day in 1941 at the Air Ministry I had a talk with one of the highest officials on the political side. I will not give his name away, but I can say that he was then considered one

of the more intelligent and promising among our politicians. I pointed out that if the Air Ministry and the Ministry of Aircraft Production set to work then and there to design and build the world's best troop-transporters they would automatically have, at the end of the war, the world's best Civil Air Transport craft. I was not arguing with him, I was just telling him. The notion seemed to strike him as quite bright—and new. He said that he would pass it on. It seems to have passed on—as have so many good men and good ideas.

That was after the Germans had shown in Norway and Holland and Belgium and France the use of transport craft. We, in fact, took little notice of such activities. The parachutists had not bothered the British Army much, and their transports were only ancient Junkers 52s, of about 1932 vintage, such as Luft Hansa had used for years. So why worry? Not until parachutists and airborne troops and supplies had outreached the British Navy and had kicked us out of Greece and Crete did we awake to the fact that there might be something in Air Transport in war-time after all.

This is not the place in which to write of airborne troops and supplies. But I just want to say that some day Civil Air Transport will find out how much it owes to those two great pioneers of war-time Air Transport, Major-General F. A. M. Browning (commonly known as "Boy" Browning) and Wing-Commander Sir Nigel Norman, R.A.F.—to give them the ranks which they held when they began their work—and to Air Chief Marshal Sir Frederick Bowhill, the builder of R.A.F. Air Transport Command. Also we owe much to Major George Woods Humphrey, who organised the Atlantic Ferry, after having been thrown out of Imperial Airways before the war, and to the old hands of "Imperials" who under the new management of the British Overseas Airways Corporation (the Boa) carried on the tradition he had built up.

Apart from the Airborne Divisions, the Air Services of all the belligerent nations soon or later started regular Transport Commands. I mention them here only to point out that well on towards the end of the war the Transport Commands of the Allied nations were doing most of their air transporting with American pre-war aircraft which ought to have been obsolete in 1940, or else with bombers, faked to carry passengers and of designs which were many years older than the

war. Some of them, according to competent critics, ought never to have been designed at all.

And that, barring a few experimental designs on paper, plus still fewer not provedly successful craft in the United States, plus vast volumes of talk, plus some millions of equally useless words in print, was as far as Air Transport had got towards preparing for Peace by the time the deciding stage of the war was going strong on the Continent of Europe, and real transport aircraft would have been most useful.

History, as I have often said, is the greatest plagiarist in all literature. It repeats itself as if it had run out of ideas and could only steal from past historians. But, being such an experienced plagiarist it does not repeat itself verbatim, and it uses the old ideas with such variations that one cannot prophecy precisely from one's knowledge of past history. Nevertheless, because the working of the human mind has not altered, so as one would notice, within historical times—say the past 5,000 years—a wide and intimate knowledge of history should and can and does stop people who have the sense to study the past from making the more obviously foolish mistakes in the future. Equally it enables such wise people to foresee the silly things which their enemies in war and their opponents or competitors in peace are likely to make. So, whether one may be preparing for war or peace, a knowledge of history is one of the most valuable of all sorts of knowledge.

Mr. Churchill, with whom none will dare disagree, said years ago, that the use of recriminating about the past is to assure efficiency in the future. That is why I have in places emphasised the foolishness, carelessness, stupidity and bigotry which have held up progress in the past and have let Air Transport go on being dangerous. No class is so stupid as are politicians, and none so bigoted as are scientists and engineers.

Moreover, we shall do well to remember that in time of peace commercial war may be just as devastating as military war. Killing the production or handling or selling of certain manufactured goods or foodstuffs by cartel arrangements, by so-called co-ordination, by merging, by creating public corporations, or even by nationalisation, may cause as much starvation and misery as would a first-class bomb attack or a tank battle. Our "distressed areas" before 1939 were as devastated, from

the point of view of the inhabitants, as any bombed area in 1945. So war in the air may go on for eternity in the form of competition in Air Transport.

Man is by nature a predatory animal. Whether in war or peace, under capitalism or nationalism or communism or internationalism, he will go on preying on his fellow men. He will fight for power if he cannot fight for wealth. In fact, Man is War. So if we must have war, let it be a civil and courteous war. Competition is good for trade.

Therefore, because history repeats itself, I have had to refer back a good deal to the beginnings of Air Transport and its developments up to this time of publication—but a full understanding of Air Transport needs a big book to itself.

Air Transport may seem to be a dull subject. But in fact there has been as much heroism in the building of air lines between 1919 and 1939 as there has been in building up air forces. And because tragedy and comedy are so closely linked there are as many funny stories of air transport as of air war. And just as, in the words of a famous advertisement, "Every picture tells a story," so every story carries a lesson to those who are willing to learn.

The stories of the growth of our Imperial Airways and the Australian Qantas, of the U.S. Air Mail Services, of Pan-American, of the Koninklijke Luchtvaart Maatschapij (or K.L.M.), of Luft Hansa, of the old Aéropostale, and of many lesser lines, if told in full, would read like the stories of the Spanish Conquistadores, or of the American frontiersmen or of our own Merchant Venturers. Some day somebody will, I hope, do for each of them what Raymond did in "La Ligne" and what Kessel did in "Vent de Sable" and de Saint Exupéry did in "Vol de Nuit" for Aéropostale.

In this book I have only been able to hint at the greatness of the men who built those lines. But I hope that it will help to stop the littler men who come after, to build greater concerns with more money behind them, from growing swelled heads.

I have stuck strictly to Air Transport. I have not touched on Sporting Flying or Private Flying or Photographic Air Survey, except where, here and there, the development of those branches has somewhat overlapped Transport.—A fat book could be written about each of them. I present the tasks to aspiring authors.

One great thing to avoid at any time is too much optimism about the future. I have always believed in preparing for the worst and hoping for the best. At the end of the War, 1914-18, people ran around assuring us that the Air Age had arrived, that Aviation had come to stay, that Air Transport would be The Thing—all because the Royal Air Force had been so boosted by the Press, and overlooking the fact that on Armistice Day half the pilots and crews in the R.A.F. climbed out of their machines and said with oaths that they never wanted to see another aeroplane so long as they lived.

The people who had talked and written most about the Air Age showed a marked distrust of Air Transport and travel.—Wherein I have always sympathised with them, not because I think that flying is necessarily dangerous, but because I know that it is unnecessarily dangerous—of which I will say more later in this book. But, in any case, there was *not* a boom in Air Transport in 1919 or in 1920. So the Royal Aeronautical Society, at a grand banquet, put up Sir William Weir (now Lord Weir of Eastwood), who had been a most able producer of armament at the Ministry of Munitions, and a first-class Air Minister in 1918, to propose the toast of Civil Aviation.

Willy Weir, in that magnificent Glasgow accent which I believe he cultivates for state occasions, said, "There are those who believe that Civil Aviation is a Lost Cause. They remind me of the schoolboy who, in an examination, was asked where the elephant was most commonly found. He replied that because of its large size the elephant was very seldom lost."

(I have told that story in another book, but it is worth telling again because it is such a splendid parable.)

Since then I have never despaired of Civil Aviation in general or of Air Transport in particular. Like the Roman who was commended because he did not despair of the Commonwealth, although I have often despaired of the intelligence of my fellow-countrymen I have never despaired of the British Commonwealth of Nations, and, because Air Transport is as much our job in the future as Sea Transport has been in the past, I do not despair of Air Transport.

But do not be too optimistic and do not become impatient or frustrated because all does not go according to plan. Remember Voltaire's saying, "*Surtout, pas trop de zèle.*" Do

not be too zealous, too keen. Remember the old negro saying, "Softly, softly, catchee monkey." Do not heed those wild enthusiasts who babble of 500 m.p.h. and 5,000 miles or 10,000 miles non-stop, till one begins to think that the best way of stopping where one is will be to take a non-stop air trip right round the world and land where one started.

When flying first began in this country, Major-General David Henderson (later General Sir David), our first Director of Military Aeronautics at the War Office, said that just as our rocky coasts and our foul climate had forced us to produce the best seamen and best ships in the world, so our small fields and our foul climate would force us to produce the best airmen and the best aeroplanes in the world. The truth of that thirty-five-year-old saying was proved long ago. Although small fields no longer come into the argument the saying holds good. We shall go on producing the best airmen and aircraft and we shall hold our own in the forefront of Air Transport.

If non-technical readers find Part I and Part II of this book too technical, or too grim about the needless loss of life in flying, I recommend them to skip it and go on to the International and Civil wars in the air, which are more political and therefore much funnier.—C.G.G.

PART I.—THE WAR WITH THE AIR.

CHAPTER I.—THE NEEDLESS DANGERS OF FLYING

First let us take a look at the war with the air, because Air Transport for passengers, goods or mails cannot be fully successful until flying is safe. And, quite definitely, flying is not safe to-day.

When old Professor Alphonse Bergêt, in 1909, wrote "The Conquest of the Air," he started something which has been going on ever since. All that time I have kept on telling people that flying is not only dangerous but needlessly dangerous. There is no reason why it need be any more dangerous than driving a car on the road, in fact, it might well be made less perilous, just as the roads themselves might be made less dangerous if human beings had any sense.

When I started preaching against the danger of flying in 1909 people used to say; "Don't be a fool, you've got to make your living out of flying. You're spoiling your own market." And I tried to make them see that making flying safe would, in the end, pay them and me vastly better than pretending that it was safe when it was not.

In 1919, after that inter-tribal squabble which we dignified by the name of The Great War, I again started saying that Civil Air Transport could not be a success until it was made safe. I had been agitating to make flying safer for the R.N.A.S. and the R.F.C. and the R.A.F. right through the war, and got myself badly disliked in some high places, but much approved in others—which stands me in good stead to-day. But, as you know, the first casualty in war is Truth, and the second is the value of human life. The value of man-hours, which is wealth, comes third. And as some people make a lot of money out of the losses of the community at large in a big war, the loss of human life and material and the complete loss of truth during a war does not matter.

And later, people used to say, "Don't be a fool. You're making a good living out of flying, so why spoil your market?" And again, I had to keep on saying that Air Transport could never be a success so long as flying was dangerous.

Ten years or so later, when Alan Cobham, the joy-ride pilot, had become, very rightly, Sir Alan, and a man of influence in the country, he produced a philosophic saying which deserves to be the motto of the Air League of the British Empire and everybody else who hopes to see Air Transport a big thing some day, "Flying can never be a success till it ceases to be an adventure." And, unfortunately, flying is still an adventure.

To-day I am still saying that flying is unsafe, and that Air Transport cannot come into its own till it is made safe, which means until we have won our war with the air.

When Dr. E. P. Warner, of the Massachusetts Institute of Technology, one of the pioneers of aerodynamic science and later Vice-Chairman of the International Civil Aviation Organisation, was in London in the early part of 1944 to deliver the annual Wilbur Wright Memorial Lecture to the Royal Aeronautical Society, he produced astronomical figures to prove, by the minute proportion of deaths per million or so passenger miles flown on U.S. air lines, that Air Transport is one of the safest methods of travelling.

When he had reeled these off at a speed which was caused by lack of time and not by any wish to befog his hearers, Lord Brabazon of Tara, our No. 1 pilot, who has, at one time or another, been Chairman or President of the Royal Aeronautical Society and of the Royal Aero Club, and Minister of Transport and of Aircraft Production, calmly remarked that he had been privileged to read the paper before it was delivered and had been able to look up the casualty figures, and so regretted to be able to announce that, in spite of Dr. Warner's convincing arguments, flying was still thirty times more dangerous than travelling by rail. Naturally, he meant British railways, which are the safest in the world, but even so the figures are out of proportion. At a later date he figured out that the death-rate on U.S. air-lines was equal to one person being killed on the railways for every three trains which leave the London Termini.

If one considers air lines other than those of the United States, where everything is in favour of safe flying, one sees how dangerous flying is. In the States they have organised air routes with radio beacons, lighting beacons, extravagant aerodrome lighting, fantastic runways, and a regular system

of despatchers such as the railways have. The possibility of forced landings on unprepared ground does not enter into the reckoning of the U.S. air lines. Consequently, the possibility of forced landings does not enter into the calculations of the U.S. aircraft designers. And as U.S. aircraft are used so largely on air lines all over the world forced landings do happen because other countries do not have the beautifully organised care and maintenance system that the U.S. air lines do. And a forced landing in the U.S. or elsewhere almost always means a crash, and generally a burn-up.

Also, in some other countries, where there is not the excellent system of radio beams and beacons which they have in the States, pilots are sometimes forced to land by thick fog and bad weather rather than by any failure in the structure or maintenance of their aircrafts. And then the need for aircraft which will land slowly, and will not burn up when they crack up, becomes obvious.

Consider the important people who have been killed in aircraft accidents in the first five years of this war, apart from enemy action.—H.R.H. The Duke of Kent; Air Marshal Sir Trafford Leigh-Mallory and his wife; Admiral Sir Bertram Ramsay, and, I believe, three other Admirals whose names I do not know; Air Vice-Marshal McCloughrey, in the same accident in which Lady Tedder was killed; Air Vice-Marshal Charles Blount; Major-General Wingate; Air Commodore Sir Nigel Norman; Air Marshal Sir Peter Drummond; Commander Brabner, M.P.; H. A. Jones and Sir F. Abrahams—of the Air Ministry; and many more.

They were all killed in accidents which could only have happened because of lack of intelligence somewhere. Either they were the fault of the pilot, or of the designer of the aircraft, or of equipment, or of maintenance, or of ground control. And remember that for every accident to a notable person, who is considered to be worthy of mention in a newspaper, there are many more (at a guess between 20 and 50) equally foolish accidents which are never mentioned. Until all such causes of accidents have been abolished flying will still be a dangerous adventure.

In November, 1944, the Aeronautical Society organised a debate on Air Transport. When we reached that section of it which was concerned with aircraft and not with the

operation of air lines, Mr. Roy Chadwick, the famous designer of the Avro Lancaster, and all Avros since 1912, put first among his requirements for air transport craft, the assurance of safety. That was the first time that I have heard at a public meeting a man of first-class importance insist on safety first as the most urgent need in air transport. After that he named comfort, to attract and retain passenger traffic, then speed and economy. Such things as soundness of structure and proper ground organisation of air navigation come naturally under the first heading of safety.

One of the most astonishing things about the growth of air transport between the wars was how little trouble was taken to make flying safer. Such devices as have tended to make aircraft safer seem to be introduced more with the idea of making the operation of aircraft cheaper than with any particular desire to make it safer for passengers. And, as the result of five or six years of war, the tendency has seemed to be to make it more dangerous.

One peculiarity of human nature is that when people become accustomed to being killed in a certain way they stop worrying about it. When motor-cars were new and strange, people were terrified of them. Now we kill more people on the roads than were killed by enemy action in Great Britain, and in spite of having a Ministry of Health and a Ministry of War Transport and a Ministry of Home Security and all the rest, not one official person does anything about it. The one man who could do most to suggest ways and means of stopping the slaughter, my old friend, and ex-enemy of the Royal Aircraft Factory, Lt.-Col. Mervyn O'Gorman, is not even consulted.

This human outlook was made plain to me forty years or more ago when I had one of the first motor-cycles in Ireland—where my family had been living for some 30 years. I rode into the yard of an hotel where we had been in the habit of leaving the horses of the family vehicles when shopping or going to church. The old ostler, who knew me as a child, said to me reproachfully, "I'm sorry to see ye ridin' one o' thim things, Sorr. They're terrible dangerous." To which I replied, "They're nothing like so dangerous as those old stage coaches you always used to be talking about. If one of them ran away down a hill, because the brakes failed and the horses

bolted, it probably turned over at the first corner, and the people on top were killed, along with a couple or more of the horses, and the people inside were injured." "Oh, Begob, that's right enough, Sorr," said he, "Sure, if a coach turns over and kills ye, well, there y'are. But if one of thim damn things blows up, where the Hell are ye?"

We have long passed bothering about motor accidents, such is our foolishness. And we seem to be getting into something like the same idiotic frame of mind about aircraft accidents. Our mental outlook is not bravery, or even fatalism. It is just sheer stupidity.

One contributory cause of much importance to the still existing danger of flying is the way in which the reasons for flying accidents, and even the happening of accidents, have been concealed. This concealment, which, in fact, is a kind of appeasement, has given the public an over-optimistic opinion of the safety of flying.

In the very earliest days of flying, when it was all in the hands of civilians, although in all countries most of the flying was done by officers of the Fighting Services, regular inquests used to be held on every fatal accident, and the findings were published.

In this country the Aero Club, which was not yet Royal, had an Accidents Investigation Committee which studied every accident and, when it was convinced of the cause, published a report on it. Later on, when the Royal Flying Corps came into being, the Royal Aero Club still continued to investigate and publish the causes of fatal accidents. And their Lordships of the Admiralty graciously allowed them to investigate the causes of accidents to Naval aviators also.

But when war broke out in 1914 these inquests by the Aero Club were stopped. Instead of that the Royal Flying Corps formed an Accidents Investigation Department of its own. Every accident was carefully studied and the results were tabulated, but they were not published. Thus almost every life which was lost in an aeroplane accident was wasted, whereas if the results of the inquests had been published, at any rate the sacrifice of one or more lives in an accident might have helped to prevent other accidents of the same kind.

I remember discussing this question at length with the officer who was at that time in charge of the Accidents Department. His excuse for not publishing their findings was that, as nothing is certain in this uncertain world, they might be libelling an innocent person by publishing their findings. Although they themselves might be 100 per cent. convinced that their verdict was 100 per cent. right there was still just a chance that they might be wrong and that, in such case, they would be putting the blame on the wrong person or on an innocent firm.

I suggested to him that they could get over that trouble by saying frankly that they were not prepared to guarantee that the accident happened because of any one reason, but that the way in which it had happened had suggested to the departmental investigators that such a series of events would follow if there had been such and such causes. They might say that they did not suggest that any one particular happening was the cause in that instance, but that if any of the things suggested did happen such an accident would follow.

During this war the causes of accidents have been studied on a far more elaborate scale with a much larger staff. I have had the privilege of seeing the evidence of the causes of certain accidents, and I have been astonished at the ingenuity and the patience and the high intelligence of the investigating officers. They have arrived at undisputable conclusions by processes of reasoning and by detective work which would win the respect of Scotland Yard or would be mighty entertaining to lovers of detective stories.

In many such cases, when the results of the investigation have been made known to the makers of the aircraft or of the engine concerned, alterations have been made at once in the design to prevent such accidents from happening again.

But the fact still remains that the knowledge is confined to the makers, whom one might justly call "The Guilty Men." And as the findings are not always passed along to other makers of similar aircraft or engines or components or accessories, there is the chance that a precisely similar form of accident may happen to a mechanism of another make.

The people who would benefit most by the general circulation or publication of the evidence of the cause of an accident would be the draughtsmen and designers of similar parts in

other aircraft or component factories. And those are just the men who are not told the true reason for accidents.

A lot of information gets round the Trade in the form of gossip, and much of it is inaccurate and libellous. To that extent, whether the story is true or false, it does put designers on their guard against the possibility of such a breakage or other cause of accident.

I believe that in certain specific instances, when the cause of an accident is considered to be quite certain, that cause is circulated confidentially, not only to the makers of the machine or engine but to other makers of such things. But I still hold that if the cause of accidents were blown wide open to the world such action would help quite a lot towards making flying safer.

If a suggested cause of an accident has been published it is sure to suggest to ingenious, intelligent and sceptical men who are concerned with the design of aircraft that the accident might have been caused by something quite different. And, if all possible causes could be published, then instead of guarding against one cause, of which the investigators were absolutely certain, designers would have still more valuable information, in that they would be warned against perhaps a dozen possible causes of such accidents, and in guarding against accidents from any of these causes they would be providing against a dozen accidents instead of one. So I am all in favour of publishing, as widely as may be, as many explanations as can be thought out of possible causes of any one accident.

CHAPTER II.—FIRST STEP TOWARDS SAFETY

The first and most important step towards safety is, I am certain, to produce aircraft which will get off with a short run and will sit down with a still shorter one. Obviously, even from the point of view of saving money, that must be so.

Quite early in the war, about 1940, when we were still wasting aircraft and crews on dropping what Mr. A. P. Herbert called "Bomphlets" all over Germany at night, bombers of that period needed far too much length of runway in which to get off and land. Mr. Pemberton Billing, formerly M.P. for Hertford, discussing this in print, said, "The modern

bomber runs and runs and runs and runs until when at last it staggers into the air the only things that are cool about it are the pilot's feet."

By 1945, under some distorted argument that the job had to do with the needs of the Services, the construction of a colossal aerodrome near London had been started. Pretty well everybody concerned with it came to know that runways up to 3,000 yards long were to be made. At least a couple of brigades of contractors' men and hundreds of trucks were used in carting away ground which was excavated in the process of flattening out or draining the country—despite the fact that one of the excuses of the Ministry of Food for depriving people of the food they wanted was the scarcity of transport.

Moreover, the making of that aerodrome chewed up some hundreds of acres of the best cornland and the best market gardens near London, and when finished it was to include that beautiful aerodrome at Heath Row, Harmondsworth, between the Staines and Bath Roads, which was laid out not very many years ago at great expense for the Fairey Aviation Co., Ltd., by Mr. C. P. Hunter, of Chester, in the days when aerodromes were like tennis lawns, and were not merely great deserts of weeds criss-crossed by hideous tracks of concrete surrounded by another, dignified by the name of the "perimeter track." Hunter was not satisfied with an aerodrome unless he could drive across it in any direction at 50 m.p.h. in comfort in his pet Mercédés. He did Fairey's so well that they had to cut up part of it to make a rough patch on which to test their under-carriages.

Although this atrocity of an aerodrome was at first talked about as being for the Services, everybody knew that it was being built to the requirements and for the use of the British Overseas Airway Corporation. The fact that the Directors of the Corporation could only think in terms of colossal passenger aircraft which would need 3,000 yards to get off the ground and another 2,000 in which to pull up if anything went wrong in the process of getting off, shows that what they regarded as foresight was pure shortness of sight. It merely meant that they could not see the immense advantage which they would have if they insisted on having aircraft which would get off and alight in a quarter of that length.

In centuries gone by when gentlemen had money to spend, some of them spent a lot on building needlessly large or stupidly elaborate buildings in the hope of raising a monument to themselves. Many of these buildings are now known as So-and-So's Folly. An excellent example is the pseudo-Greek colonnade on the top of the Calton Hill at Edinburgh, which was somebody's folly. I feel that the huge aerodrome by the Bath Road, long after it has been chopped up into housing estates, will be known as the B.O.A. Folly.

In this connection the hand of Fate seems to be active somewhere, because round about the time when the B.O.A. Folly was started, we heard a lot about the laying-out of what was to be the world's most colossal, monumetal, awe-striking aerodrome in the world, at a place called Idlewild, in the United States. The intention was that in some way it was to be the vital aerodrome of North America. I can only hope that in a very few years after this book appears so much progress will have been made in the design of safe aircraft that the place will become a deserted wilderness and will deserve the name of Idle-Wild.

At the same time, hundreds of thousands, possibly millions, of good pounds sterling or Canadian dollars had been and were being spent on one huge aerodrome in Newfoundland called Gander Lake, and another one in the Labrador called Goose Bay. The names seem pleasantly appropriate. They also in future will, I hope, return to the wild, except for runways of such reasonable length as will be needed for the take-off of reasonable aircraft.

In the course of that debate at the R.Ae.S. to which I have referred, Captain Archie Frazer-Nash, known all over the world as the designer of the gun-turret, which for at least three years of the war gave such protection to our bombers, pointed out that if our designers would take the trouble to watch a common or tree-top crow landing, they would see that he came down without any flapping but simply by extending his wing-tip feathers separately and that when he wanted to fly fast he closed them all up into a single plane. He suggested that aircraft designers should think up some analogous way of getting their aircraft down, and up, slowly and safely.

There is, I admit, danger in studying living 'creatures too closely when designing a mechanical contraption, because one

cannot be sure whether a given feature is so for aero-dynamic, or structural, or alimentary reasons—for instance, whether a bird's wing-bone is as it is because its cellular structure is the strongest and best spar for a wing of that shape, or whether it is because it has to carry food (or the life-force) to the muscles and skin and feathers. Is a bird's breast-bone shaped as it is because its buff bow is the best streamline for that particular bird's best speed, or because it gives the best anchorage for the muscles which work the wings, or because it gives the best pumping base for the blood? And remember that God has never thought that making a revolving joint and feeding through it was worth while. He left that ingenious little animal Man to do that job.

In the very early days of flying a familiar figure among air-minded folk was a gentleman of dark complexion and British nationality named Blin Desbleds (pronounced roughly Blaing Dayblay), who came from the formerly French island of Mauritius. He lectured copiously on aeronautical science, of which we knew even less than we do now or than he did then. But one of his sayings deserves to be historic. Warning us against trying to copy birds, he used to say, in his rich "down South French accent," "When the Chief Designer of the Admiralty is about to make a Dreadnought he does not begin his studies by contemplating a bloater."

This book is no place in which to be highly technical, but I take it that a great many of my readers have heard of the Handley-Page Slot. This slot is a space between what one might call a false leading-edge on a plane, a long thin piece of metal, or timber, more or less like the slat of a Venetian blind, which is pulled forward automatically when the wing reaches a certain angle, and the true leading edge of the wing itself. I had the privilege of making the H.P. Slot known to the world in *The Aeroplane* in March, 1920. Since then it has been highly developed. And probably it reached its high-water mark of usefulness on the old H.P. 42 biplane, the Hannibal and Hercules aircraft of Imperial Airways. And I repeat here what I have said many times before, that not one of those machines either killed or seriously injured a man till the last of them disappeared entirely over the Persian Gulf—which was a pretty good record for twelve aircraft in eight years' service.

The H.P. Slot was also used on Bristol Fighters and various other R.A.F. machines, as well as on many Air Transport craft. It certainly saved many lives by allowing unskilled pilots to get down safely when they ought to have killed themselves, and by allowing skilled pilots to get down safely in circumstances in which otherwise they would certainly have been killed, along with passengers.

The drawback to the H.P. Slot obviously was that it was the patent of one manufacturer and naturally his rivals resented being called upon by the Air Ministry to use a competitor's invention. I saw just the same thing happen in the early days of bicycles when the Singer Company of Coventry took to using the Dunlop Pneumatic Tyre. No other cycle manufacturer would touch it for more than a year because they were afraid that people would say that they were copying a competitor. They had to give in at the finish because it was a good thing. The Aircraft Industry will do well to learn the lesson. If any competitor has a good thing, grab it.

The R.A.F. had to give up using slots during the war, because if one slot were damaged while in action and the machine came in with one slot working and one not, the machine would probably turn over and be wrecked, because one wing would be held up more than the other. I did, in fact, see a Lockheed Hudson come in, early in 1940, with the flap on one wing riveted to the trailing edge by the punched-out edges of bullet-holes in the trailing edge sticking into corresponding holes in the flap. When the pilot came down to land one flap slid out and the other did not and the machine started to do a slow roll. Fortunately, the good flap came back and the pilot landed without flaps, and shortly afterwards was without an under-carriage.

Now those objections obviously do not apply in civil air transport so there is no excuse for any aircraft manufacturer to refuse to use slots and flaps unless he can find or invent something better. But there are certain practical difficulties unless the designers will wake up and realise that Safety First is the most important requirements.

For example, certain U.S. transport aircraft, adapted from bomber designs, were tried out in 1944. One type looked beautiful on paper. It had a long, very low tricycle under-carriage and the belly of the machine was so close to

the ground that it looked as if the passengers could just step into it. So long as it was only used on perfect aerodromes with runways thousands of yards long, it would probably be all right. But when pilots tried to get into ordinary aerodromes with ordinary runways, which they could only use by alighting with their tails well down and a big angle of incidence on the wings, they found that the first thing to hit the ground was the tail. There was a grinding crash, and a cloud of dust and small stones, and the machine ultimately came to rest on its beautiful tricycle under-carriage but without a tail. And all through the designers trying to be too clever and not looking far enough ahead.

If anybody had tried to make a forced landing with that aeroplane, they just would not have had a hope. Although not in itself a terribly fast aircraft it did, nevertheless, hit the ground at somewhere about 120 to 130 m.p.h., and that is very much too fast for a forced landing.

Towards the end of 1944 I was talking to one of our most experienced aircraft designers about this question of getting off and getting down with a short run. He said that he had tried in a wind-tunnel a model with an exaggerated slat in front and an exaggerated flap behind, which at any given speed gave more than twice the lift which he could get out of the wing in its normal condition. Which meant that he could get the same amount of lift at a much lower speed. There were certain technical difficulties about using such a wing in practice, but there was nothing that could not be overcome by a little patience and ingenuity.

One of the most beautiful examples of that kind of ingenuity which after going through all kinds of complicated practices arrives at the utmost simplicity, was exhibited round about that same time by the Fairey Aviation Co., Ltd., when they introduced to the world the Fairey Firefly two-seater fighter, built for the Royal Navy, with the Fairey-Youngman flap. That amounts in effect to the well-known winglet, or supplementary wing, which we see in all pictures of the old Junkers 52, the three-motor monoplane passenger transport, which, to my mind, was the best all-round passenger aircraft in the world up to the outbreak of war in 1939.

The Junkers winglet trails under and behind the trailing edge of the main plane. When the machine is cruising it

trails in a neutral position, and when the machine is either taking-off or alighting it is pulled down to a greater angle in relation to the air and so gives extra surface and lift to the main wing. The Youngman flap does exactly the same thing, but it is much bigger in proportion to the wing itself, and instead of trailing behind and below, and setting up extra resistance all the time, it tucks up so flat into the wing that one has to look carefully to see whether it is there, or rather, where it fits in.

Obviously, any passenger aircraft fitted with a flap of that sort all along the trailing edges of all its wings would have a very much quicker take-off and a much shorter sit-down. In fact, the Youngman flap is not so much an auxiliary winglet as a device which turns a high-speed monoplane into a slower speed biplane. And I still have a lingering belief in some development of the same idea applied to the leading edge of the plane, so that, instead of having merely the Handley-Page slot, the wing will push out and upward an extra plane which will turn the whole structure into a triplane. Some such development has been suggested in *The Aeroplane* several times in the years between 1920 and 1939.

Anything which will help towards a shorter take-off and slower landing will make important first steps towards safety in Air Transport. And when we have reached that happy stage we shall find that those immense aerodromes at Gander Lake, Newfoundland and Goose Bay in the Labrador, deserve their names, and that the super-hyper-airport at Idlewild, U.S.A., will return to its idle wild state.

CHAPTER III.—THE FIRE RISK

One of the greatest of all risks in air transport is fire. Aircraft do sometimes crash and kill people, in large or small numbers, without catching fire. But in most crashes the petrol (gasoline, if you like) does catch fire. The consolation which is generally offered to the next-of-kin is that it was such a bad crash that they were killed on impact, or were knocked out and never felt the fire. But anyone who knows much about the Flying Service, either here or in the United

States or anywhere else, knows perfectly well that there have been very many crashes in which the crew, or some of them, have been tangled up in the broken structure of the machine and have there been grilled to death.

Moreover there have been hundreds of accidents out of which the crew or passengers could have walked unhurt if there had been no fire. A person may be slightly stunned by shock and only recover when fire has caught hold and he finds himself trapped. There are aircraft which are fire-traps in themselves. The three-engined Savoias which the Italian and the Belgian Sabena lines used before the war had a narrow alleyway between the two aftermost seats into a tiny vestibule out of which the door opened at a right angle. In an ordinary belly landing followed by a fire, or a panic, there would have been every chance of a jam, like that in the notorious Bethnal Green air raid case, without a hope of getting out. The old Junkers 52 had such big windows that any but a very fat person could get out through them.

There has been endless argument about the best way of getting rid of the fire risk. The obvious method is to use Diesel motors with heavy oil instead of using ordinary petrol (or gasoline) motors. The advocates of heavy oil point out that it is cheaper in the first place and is not liable to catch fire. But they have to admit that when fuel oil does catch fire it burns like sealing-wax instead of going off in one big "woof" as petrol often does.

On the other hand, if one is caught in that "woof" of petrol one is not much interested in anything that happens afterwards. And although that sudden burning evaporation, which one cannot properly call an explosion, may take place in front of the aircraft and entangled members of the crew may be at the back of the machine and may escape being burnt, there is also a possibility that the petrol may escape from the tank and soak into the ground all the way round the machine or all along the machine so that when it does catch fire, through somebody in the rescue gang breaking an electric lead and causing a spark, the ground has become so saturated with petrol that it burns like the wick of a cigarette lighter.

Where heavy oil, and therefore Diesel engines, are safer is that if, when a machine crashes and the tanks are burst and

the oil does leak out, somebody strikes a match or breaks an electric lead or causes a spark, there is no inflammable vapour in the air to catch light and flash back to a quantity of liquid spirit, which is what happens when a petrol tank bursts.

We are told by highly scientific people that there is no hope of the Diesel motor ever catching up with the petrol motor in the sense of giving as much power for the weight of the engine. On the other hand, we have the authority of Sir Roy Fedden, designer of the famous Bristol series of engines, for saying that if enough money were spent on developing Diesels they could be made the equal of the best petrol engines.

He said publicly that if he could have £400,000 to spend on development, not on experiment or research, he would produce an aero-Diesel which would give as much power for weight as would the best petrol engines. He had already built a Bristol radial Diesel which was as good as the best gasoline engines of the year-but-one before, but he did not get his £400,000. And the lack of that Diesel engine must have cost us hundreds of lives and millions of pounds.

But to-day the argument is that because we are so near the general use of jet-propulsion or petroleum turbines, spending all that money on Diesels is just not worth while. Furthermore, as the jet engines all use oil which is heavier and less inflammable than petrol, in varying degrees, therefore, with jet propulsion we can achieve a greater degree of added freedom from fire than we could hope for from Diesels.

That, I think, is probably true. But when one thinks of the hundreds, probably thousands, of men who have been burnt to death because we insisted on using petrol when we might have had heavy oil Diesels at the latest by 1939 if we had spent the money on them, one cannot help feeling contempt for the lack of enterprise and the bigotry and the pig-headedness and carelessness for human life, of those whom, according to the Church Catechism, God has been pleased to set in authority over us.

So strong is prejudice, or so careless and apathetic is the official mind, or so strong are vested interests, that we have never even gone to the trouble of using direct injection of petrol in our engines, as the Germans did in all theirs, instead of using carburettors which make the engines heavier and are admittedly a common cause of fire.

I hold firmly to the belief that there is still plenty of time to develop Diesels for Air Transport. Jet propulsion will take some years to develop. It uses 50 per cent. more fuel than does an internal combustion engine. All the same, the user would be to the good in having done the distance in much less time. But there are some people who are not in such a frightful hurry and would willingly take twice as long if they could be assured of safety as well.

Besides, there are freighters to be considered; slow, ugly things, with fixed undercarriages but great weight-lifters, which will carry big loads across hill country and estuaries and forests. The Bristol Aeroplane Co. Ltd. brought out a design for one late in 1944, just the thing to cart goods around over devastated or undeveloped country. I made myself very unpopular by suggesting that it ought to be called the Bristol "Freightful." It looks it, but it does a fine job of work, and will earn pounds where a sleek high-speed passenger craft would be earning shillings.

Now that is just the sort of thing for which a slightly heavy, completely reliable, and practically fireproof Diesel is needed. And it would pay equally well as a short-range, cheap fare, tourist-coach of the air—which is another reason for developing and using Diesels.

For the sake of our petrol and our carburettors we (that is say the Air Ministry and the Ministry of Aircraft Production on our behalf) have spent in the aggregate an enormous amount of money and thousands and thousands of man-hours of intelligent officers and men investigating the causes of fire and thinking up ingenious gadgets and tricks to put out the fires when they start. Comparatively little has been done to stop them from starting.

I came across an arrangement not long ago in which all kinds of operations which previously had been done by the pilot or the flight engineer with lots of taps and levers and cocks, had all been combined in one operation by which the pilot shut off the petrol, cut off the spark, put on the fire-extinguisher, and did a lot of other things, with a mass of tubes and wires and connections such as would have rejoiced, or might have roused a pang of jealousy in the heart of, the late Mr. Heath Robinson.

But because the official mind is so careless of human life, and because the scientific mind is so blindly concentrated on the line of thought in which it has been trained, and because the engineering designer likewise cannot get out of his groove, we shall probably go on making for many years to come, quite unnecessarily, aircraft which will burn up when they crack up.

CHAPTER IV.—THE COLLISION DANGER

Another risk of flying which is likely to grow unless something drastic is done about it is collision. If a pilot collides with any fixed object near the aerodrome, that is either his own fault or the fault of the aerodrome control official. And if he collides with something a long way from the aerodrome itself, that is still more likely to be his own fault. There were four outstanding examples of such collisions within a few months of one another at the Trans-Atlantic terminal at Prestwick in 1942 or 1943. All of them can only be put down to what in the States is called "cockpit error"—that is to say bluntly, a stupid mistake on the part of the pilot. The first was the crash of a Liberator on its way to the States with the usual crew and, I think, 14 passengers. It took off normally from the runway, set off in bad visibility and, about an hour afterwards, hit the extreme tip of Goat Fell on the Isle of Arran. There was no excuse for the collision. At that distance the machine should have been much higher up than the 3,000 feet which is the top of Goat Fell. And in any case the hill was 10 or 15 miles off the proper course of the machine, so it should have been well clear. The cruel bad luck for the passengers was that if the machine had been 50 feet higher or 50 yards to the right or left it would have missed the hill altogether.

I am not sure whether radio silence was the rule at that time, but I know that incoming machines were picked up on the radio and given their positions and instructions for coming in. But I suppose that keeping immediate track of the course-and-distance of an outgoing machine with two of the most experienced pilots in the country in it was nobody's business. If they had been tracked by wireless somebody might have noticed that they were going to hit something.

The second was another Liberator with a well-known and experienced pilot in charge. It started to take off from a runway at Ayr, not at Prestwick itself, and for some unexplainable reason started on the wrong runway. Whether the pilot discovered his mistake or whether something queer happened nobody can know, but the machine ran over the edge of the runway, tore through the rough grass and over rough ground to what should have been the right runway, carried on after losing a lot of speed going through the rough, and eventually, without leaving the ground at all, hit a haystack at the far side of the aerodrome when it was close up to its flying speed. The aircraft turned over and caught fire and everybody was burned to death.

Possibly considering the speed of the machine everybody was stunned before they were burnt. Let us hope so. But that certainly was a case in which Diesel oil instead of petrol would not have caused a fire.

The third case was a U.S. pilot coming from America with a load of passengers to Prestwick. He had done the journey several times before. When he signalled his approach he was told to circle round awhile because certain other machines were in front of him and had to be got down first. Instead of keeping up high he went away off to the south and evidently came down much lower than he had any right to come. He hit a hilltop at somewhere about 2,000 ft. away down in the Mull of Kintyre. And everybody on board was killed.

There is just a possibility that because of a change in atmospheric pressure between that at which he took off from Canada or Newfoundland and the pressure around the Clyde estuary his altimeter may have indicated that he was much higher than he was. But, even so, he or his radio man could have got the atmospheric pressure from Prestwick and adjusted their altimeter accordingly.

The fourth and to my mind one of the saddest, happened also at Prestwick in the late summer of 1944. One of the new and much advertised Skymasters had come over from Normandy with a cargo of, I heard, 20 wounded U.S.A. soldiers who were to be flown back to the States.

Just why, considering the cost of air transport, the U.S. Army Air Corps Transport Command was justified in flying

so many soldiers back, when they could have been just as well treated in a U.S. hospital here, without adding the danger of air transport to the dangers through which they had already passed in Normandy, is for the U.S. Government to explain. It looks like trying blatantly to get free advertising for Air Transport in general and for that make of aircraft in particular. If ever there was a case of which one might say "Is your journey really necessary?" that was one.

Anyhow, the aircraft arrived over Prestwick at night in rain but otherwise not particularly bad visibility. For some reason best known to himself the pilot asked by radio whether he might come in on a right-hand turn, instead of circling left onto a runway, which would have been the normal method on that day. He was given permission to do so and flew along parallel with the coast very low down in a northward direction and then suddenly pulled round to the right and pulled up, hit a radio mast with one wing, swung round off it on top of a row of small houses, killed himself and everybody on board and set the houses alight and killed several people in them.

The only possible explanation of his manœuvre is that he came in on his right-hand circuit and mistook the lights on the railway station just about level with the aerodrome for the runway lights, came down low at them, then saw his mistake, and pulled up suddenly, turning at the same time, not knowing there was a radio mast anywhere near.

Accidents which cannot be explained are constantly happening, and so when anything happens which might have caused an unexplained accident it ought to be reported to some central authority—say the Department of Civil Aviation, or the Accidents Branch of the R.A.F.—and circulated as widely as possible, so that as many people as possible may hear of it and avoid such a thing happening to them.

Here is an example.—Mr. Lankester Parker, who has been Chief Test Pilot for Short Brothers, Ltd., since about 1914, and has flown everything from light float-planes to the biggest flying-boats, told me some time in 1943 that an incident had happened to him which might well have caused an unexplainable accident. He was taking off a new Sunderland when a nut fell from some unknown place onto the metal floor of the cockpit. With a sudden thought that it might roll through a hole and jam one of the chain-and-sprocket gears which work

the controls, he bent forward suddenly to pick it up, and in doing so hit his chin on one of the horn-like points of the sector of a wheel by which the controls are worked.

Momentarily he knocked himself right out. When he came round the big boat was doing a neat spiral dive a few hundred feet above the ground alongside the River Medway. And if he had stayed out for a minute, or less, there would have been another unexplained accident to a famous pilot.

Now who would have been to blame? The mechanic who left a loose nut around, the inspector who failed to see it, the pilot who failed to see that the horn of the wheel would bump his chin, the designer who used the sector of a wheel instead of a complete one? We all bump our heads sometimes, and lots of aircraft have sectors for controls. I give it up.

But here is an accident which did happen through nearly the same thing. Some two or three years before the war a big four-engined U.S. machine was coming down to land over San Francisco Bay. It came in on a fine circling glide, and instead of straightening out to the runway it went on with its circle till it dived into the water. The two pilots were first-class. There was no reasonable explanation until weeks afterwards when the machine was found and hauled out of the water. Then the investigators found that the co-pilot's headphones were jammed between the lower end of the control-column and some fixed part of the machine. Which means that the more the pilot tried to pull the machine out of its downward path the tighter he jammed the obstruction.—Whose fault was that?

Those are some of the dangers of air transport which will have to be abolished somehow and I present them as problems for organisers of air transport.

CHAPTER V.—THE RADIAURA

For years U.S. aviators, Service and civil, have had a picturesque but grim phrase for collisions with mountains which are concealed by mist or cloud. They talk about flying into a stuffed cloud. And stuffed clouds are still dreaded more than almost anything else. Those gallant lads who have flown

for several years over the mountains from India to China—over The Hump, as they call it—seem to have avoided stuffed clouds with remarkable skill, but some of them “have had it.”

In 1924 when I was in the United States I met Dr. C. H. Lewis, who was then second-in-command and is now chief-in-command of the N.A.C.A. (National Advisory Committee for Aeronautics) at Langley Field, I was greatly impressed by his practical knowledge of things which too often are settled by theory. Whether from him or somebody else I cannot remember, but I learned that the U.S. practical scientists, who are stronger on *ad hoc* research than on basic research, had been trying to discover a positive altimeter, or height-recorder.

The ordinary aneroid altimeter works on atmospheric pressure. It may be accurate to within a few feet so long as the atmospheric pressure all over is the same as that at which the aircraft left the ground. But if an aircraft flies across country for a distance there may be a great deal of difference between the atmospheric pressure of the place at which he has arrived and the pressure of the place which he left. And so there may be a correspondingly great error in the height at which he thinks himself to be. And that error has explained a lot of collisions with stuffed clouds.

These scientists got hold of the idea of what they called a “bouncing ray.” The operator in the aircraft sent out a radio signal which hit the ground and bounced back and was caught by a receiver in the aircraft. The time which the ray took between sending and receiving indicated the height above the ground. No human comprehension could register the interval between sending and receiving, but delicate instruments could do so.

Given that the ray would bounce off the ground below, it would also bounce off ground at the same level or above, and so the bouncing ray might be used to warn pilots against the stuffing in the clouds.

At that time, more than twenty years ago, we were beginning to understand a little about radio. Ships had been using it quite a lot and there were radio-telegraph experiments with aircraft at Brooklands about 1915, and radio-telegraphy, called officially wireless telegraphy, or W/T, was in regular use in 1917-18.

About 1914, a strange adventurous person named Grindell Matthews—who later acquired much notoriety with an invention which he, or the Press, called the Death Ray, which he claimed would stop the engines of cars or aircraft—claimed to have invented a wireless telephone. He put some strange instruments into Benny Hucks's Blériot, which Hucks then flew along the Welsh side of the Severn above Bristol, and a friend of mine, one, P. K. Turner, sat in a hut on the Gloucestershire side and sent verbal messages, which Hucks, always honest and truthful, said that he thought he had heard but could not be quite sure. That was the first alleged reception of radio telephone messages in aircraft. But in 1924 we had got much farther than that with radio-telephony. And this bouncing ray was then a somewhat similar beginning of what now comes under the very widespread heading of Radar.

Anyhow, the idea impressed me a lot and when I came back to this country I wrote an article which appeared in *The Aeroplane* suggesting that what was obviously needed to prevent collisions in the air between aircraft was some radio arrangement by which each aircraft would fly in an aura of radio waves. When two aircraft approached, each would pick up radio waves from the aura of the other and these waves would operate, by some way on which I was completely vague, on the controls of the aircraft in much the same way as the automatic pilot, commonly known as George, operates to-day. And thus when the aura of two aircraft impinged on one another they would bounce apart, just as do two balloons when they touch—parachutes do much the same thing.

Anyhow, I published the idea, more as a joke than anything else, on the principle that there is many a true word spoken in jest. I sent a copy of the article to Dr. Lewis, who wrote a friendly letter back saying that his people were working on the idea. I called the apparatus which might result from the success of these experiments, the "Radiaura." And quite a lot of the old hands in aviation remember the name and the idea. But nothing was heard of it for years.

Then, early in 1941, the Germans published a story about a wonderful apparatus used by their bombers called the Wolkenröntger, which roughly translated means the X-ray of the sky. Wolken is the same as our word "Welkin," as in

"Make the Welkin ring"—Röntger is a reference to Dr. Röntgen, the originator or inventor of the X-ray. And they claimed that with the Wolkenröntger observers in their bombers could see through cloud and darkness and pick out gun stations or any other targets for which they were looking. How much truth there was in that story I never learned—they may have had it or they may have just thought of the idea and put it about in the hope of drawing us out and saying we had something better. But the R.A.F., like the Tar Baby, "Ain't sayin' nuffin."

Somewhere about that same time Air Marshal Sir Philip Joubert said something on the radio about a "delicate apparatus" in our night-fighters which enabled them to pick up enemy aircraft in the dark and shoot them down. And quite a long time after that we began to hear about what had come to be known as "Pathfinder Technique," by which, again with "delicate instruments," our Pathfinder bomb-aimers were enabled to pick out targets in the dark through what we now call "10/10 clouds," meaning that the sky is completely overcast. I do not profess to know anything about how it is done, but the whole lot from the bouncing ray of 1924 to the Pathfinder Technique all points towards methods of assuring safety in air transport.

With such an appartus as my 20-year-old Radiaura, which surely ought to be possible by now (it may exist for all I know), aircraft could automatically be turned away from one another to avoid collision. Something of that sort is much needed, because when you get two aircraft approaching at 300 m.p.h., which is quite usual, they are coming together at the rate of 10 miles per minute. And that does not give either pilot much time in which to dodge out of the way of the other if he can see him. Consequently, the approach warning and the dodging must be done automatically.

Moreover, besides abolishing altogether the danger of the stuffed cloud, some such Radar apparatus ought to enable pilots to see through fog or darkness, or both, and to see with their own eyes the runway on which they are going to land instead of having to rely on signals from the ground and what is called Z-Z technique.

In 1924 a cheery adventurer in the U.S.A. named Dr. Warren had a scheme for clearing fog over a runway by drop-

ping "electrified sand" on it. "Doc" Lewis will remember him. It worked momentarily, but the fog closed in on the lane it cut. In 1943-44 the R.A.F. spent tens of thousands (probably hundreds of thousands) on a scheme which they called "Pluto"—a row of petrol burners along each side of a runway. It was only a development regardless of cost of the old flares of 1915-18; open buckets of petrol along a line. And "Pluto" will only work in a flat calm. A wind-drifted fog from the sea will just drift in waves over the burners. The cost has been worth while because of the lives it has saved. But it is nowhere near the last word, or even the beginning of the answer to fog.

If we can get away from the danger of collision in fog or darkness and the danger of hitting mountains or anything else, and if we can enable pilots to see where they are landing, then we shall have got rid of one of the greatest dangers of air transport.

CHAPTER VI.—ICE AND HEIGHT

There is another problem in our war against the air which still has to be satisfactorily solved, that is what it commonly called de-icing. There are several kinds of atmospheric conditions in which ice will form on any parts of an aircraft which hit the air. Experienced pilots know almost exactly from the look or shape of clouds, before they hit them, whether they will form ice.

One occasionally meets these icing conditions, as aviators call them, when driving cars. When I first met such conditions I was puzzled by the fact that when the car was standing still the ice melted, but as soon as it began to move at all fast the wind-screen iced up. This generally happens on a nice bright frosty day with only a slight mist visible, and generally with the sun shining brightly through the mist, and visibility not at all bad, that is to say, perhaps a matter of a mile or two.

Apparently the ice is formed by particles of moisture in the atmosphere below freezing point but not actually frozen. As soon as those particles are hit by a hard body they burst and form ice. Naturally an aeroplane flying at high speed

hits an enormous number of small particles, and so quickly that it accumulates a lot of ice on the leading edges of the wings, on the nose of the machine, and on the edges of the fin and of the tail plane. If the pilot continues flying in this layer of ice-forming air he will find the ice forming on the leading edges of the wings and building up into a ridge some little distance back, with the result that it entirely destroys the air flow over the wings and causes the machine to stall and dive. Apart from that, the weight of ice on the machine may make it sink. Ice on the tail plane and on the fins similarly upsets the air-flow on the elevators and rudder, but as a rule, not so seriously as the lift of the wings is affected.

There have been many schemes to keep ice off the wings, or throw it off. One is smearing thick grease along the leading edges. This works all right for a while until the battering of the ice particles wears away the grease, and it is then just as bad as ever. Another method, popular in the States, is to fit a sheath of rubber along the leading edges which does not interfere with their shape. When the ice begins to form, the sheath can be blown up by an air-pump with the result that the layer of ice on top of the rubber cracks away. On the whole, that works pretty satisfactorily. But, of course, it adds weight and complications.

Another scheme, which I feel ought to be better, is to have the leading edges hollow and drive air from the exhaust pipes through them, so that as soon as the ice tries to stick to the leading edge it is melted and blows away. For years leading scientists used to argue that the exhaust gases from an aero-motor do not generate enough heat to keep a leading edge warm in serious cold.

A number of experiments tried by Sir Alan Cobham proved that it can and does. So that scheme may be useful when we come to Civil Air Transport. Probably in war time it has the same disadvantages as the slot, namely, that it may be shot up and cause trouble. And in any case the mechanism to blow hot air from the exhaust into the slot in front of a Handley-Page slot seems tricky. But I believe that Sir Alan has beaten the problem.

Another way of avoiding icing-up and at the same time of avoiding bad weather, and theoretically increasing the speed of aeroplanes enormously, is to fly at heights of more than

30,000 ft. where the moist ice-forming layers of air do not exist or the cold is so intense that these layers are frozen and descend until they again become liquid. At least that, I am told, is the explanation. In any case, at that height aircraft are free from ice and, again in theory which seems to be supported by practice, the air is flat calm, although the air-currents may be blowing at quite a high speed. So there are no bumps. But the speed may be badly cut down in one direction or greatly put up in the other. Or a side wind may cause heavy leeway and complicate navigation.

At such heights there is not enough oxygen in the air to support human life, and not enough atmospheric pressure to keep the human mechanism going. People do not, as a rule, know that there is no such thing as suction. All that a suction pump does is to pull air out of a cavity and so leave a space at less than atmospheric pressure into which liquid (or a piston) may be forced by the weight of air behind it.

Mr. Cyril Uwins, who held the World's Height Record for a considerable time, told me, after he had been up to 40,000 ft., that he did not believe that anybody could get much higher, even with an oxygen supply, because at that height the air pressure is so low that although one may flood one's face with oxygen there is not enough pressure to push it down into one's lungs.

The height record has been raised considerably above his 40,000 odd ft. by putting the pilot into an airtight suit which has been kept pumped up by power from the engine, so that he himself has been breathing and living in a pressure which was probably not much less than that which one would normally meet at 10,000 or 15,000 ft., which is, I believe, about $7\frac{1}{2}$ lb. per square inch, instead of the normal 15 lb. at sea-level.

So the remedy for all this when air transport is seriously developed is to have an air-tight cabin in which pressure will be pumped up from the engine to a figure about equal to that of the normal air at 5,000 ft., which is quite as high as a good many people, especially those with weak hearts, care to go.

Some years ago, a friend of mine and his wife, named Drake, crossing on the Pan-American-Grace (Panagra) Line from Chile to Argentina, had within the cabin a little fat foreigner of some sort who, when they got to about 10,000 ft., began to feel the lack of air-pressure. By the time they

reached 15,000 ft., at which the aircraft goes over the pass close to the great mountain Aconcagua, the poor little man was lying on his back in the gangway gasping like a fish out of water. And they were afraid that he would die before they had slid down to Mendoza on the Argentine side.

These pressurised cabins will probably be quite safe. At any rate, there will be no more likelihood of a pressurised cabin bursting, with the result that the passengers would burst too, than of a wing coming off or an engine falling out. Such things have been known to happen, but they are infrequent. At such heights apparently there is nothing to do and nothing to see except sit and read.

The surprising thing is that, at such heights, where there is practically no air at all, the super-chargers of the engines should be able to collect enough air to supply a normal charge of gas-mixture to the engines, let alone leaving enough to pump up a pressure cabin.

At any rate, up to the beginning of 1945, most of the Trans-Atlantic flying at big heights above the weather has been done with oxygen supplies. But some of the more hardened pilots and air-crews get sick of it after a while. If there is no ice in the clouds they would rather fly blind through them. And if there are a few hundreds of feet between clouds and water they would rather fly in sight of the sea.

Oxygen does not affect the health of air-crews because they only have to use oxygen for perhaps fourteen or fifteen hours on end, and then they probably have three or four days' rest before they have to cross the Atlantic again and sit with oxygen-masks on their faces. In fact, I am told that there are pilots employed by one or other of the Atlantic Ferry Services who are not particularly fond of flying the Atlantic and have managed not to do as much as one crossing per month, although paid a handsome annual salary. They, at any rate, are not likely to be affected by high flying.

Personally, my idea of cross-country flying, as I said before, is to fly nice and low so that I can see the little trains puffing across the country like those in a Walt Disney film, and the pretty steam-boats, and the cars on the road, and all the rest of it. That means flying somewhere between 500 and 1,000 ft. and at that height on almost any day one does get bumped about a bit.

Some passengers do not like being bumped. Moreover there is the point that with very high-speed aircraft considerable damage might be done by bumping. One of our crack single-seater test pilots told me that at somewhere between 350 and 400 m.p.h., low enough to get these bumps, whenever the machine hit an up-current, the feeling was just as if the leading edges of the wings had been hit with a sledge-hammer. So presumably there are good reasons for flying high. And thus, I suppose, that we must reconcile ourselves to sitting in pressure-cabins.

CHAPTER VII.—WHO WILL TRAVEL BY AIR?

Hereabouts I may say something about the possibilities of air transport. Although they are not really so vital or so interesting as is the abolition of the danger of Air Transport they are all part of our War with the Air. People often ask who is going to travel by air. There are some optimists who say that everybody is going to travel by air, that everyone is going to have his own helicopter or his own light aeroplane in his own back garden and is going to run about in the air just as everybody before the war had a small car or a motor-bicycle. All I can say is, Heaven defend us from anything like that state of affairs. If the kind of fool who makes the roads dangerous on a Saturday and Sunday either by fast and dangerous driving or by sheer stupidity and slow driving is going to be allowed into the air, then all my Radiaura and everything else is not going to stop crashes.

The pilot with the small aeroplane, especially the small sporting single-seater variety, must be strictly restrained. Personally, I have little faith in the sporting single-seater, because the whole history of motoring has shown us that as soon as a man has got together enough money to buy himself a motor vehicle he at once becomes fair mark for a designing female. Consequently any form of motor vehicle—water, land or air—must at least be a two-seater.

I have in mind an accident on a German aerodrome a year or so before the war, when some young fool in a sports plane thought that looping round a big Junkers air liner was funny. Unfortunately for everybody, the passenger transport was

travelling faster than the sports-plane pilot reckoned, and instead of looping round the machine, it looped into one wing, and the result was a sticky mess on the ground. If that sort of thing could happen in well-disciplined Germany what might we expect among our own people if the air authorities do not keep the strongest possible hand on them.

There is no use saying, "Oh, but our boys would not do a thing like that." I remember one of our most respected Air Marshals looping fighters off the ground in the war 1914-1918. I remember one pilot making a bet that he would fly through a Bessonneau portable hangar, which he did. Only, unfortunately, he picked the wrong one in the line, which had the curtain down at the far end, with the result that he pulled the whole thing down on top of himself and was picked out of the wreckage without a scratch.

Another very good chap, a friend of mine, looped round the thin part of the Forth Bridge. He might very well have done what the German pilot did and have misjudged his distance and looped into a train. So there is another danger of air transport which must be prevented by strictness of action?

But the point rather is who is going to travel by air? When the Income Tax goes up to 15 shillings, will anybody of us be able to afford to travel anywhere, whether our journey is necessary or not?

There is a possibility, of course, that if we become more National-Socialised, there may be no need for us to pay for our Air Transport. Those of us who are fortunate enough to be in Nationally-Socially important positions will travel by air at the Government's expense in the same way that all our little bureaucrats and Civil Servants have been able to get sleepers on the London-to-Scotland railways by requisitioning them, when much more important people who pay their salaries have to stand.

But there is also the possibility that a fatherly Government will lend aeroplanes to those of us who have been pilots or will give free air transport to others of us who have been good boys and girls just in the same way that the German National-Socialist Government used to treat worthy workers to sea voyages in luxury liners under what they so rightly called the "Strength through Joy" Movement. The Russians,

whom we can never adequately admire and imitate, had the same idea before the war. Besides paying enormously increased piecework wages, under the Stakanovich principle, they treated them to holidays in luxury hotels at the summer resorts in the Crimea and the Caucasus.

Also manufacturing and commercial firms which are allowed to enjoy a certain measure of independence and have neither been telescoped, merged, rationalised, liquidated nor nationalised, will no doubt want to send their representatives by air to foreign parts either to spy out the nakedness of the commercial land or to sell things to anybody who will buy them and has money to pay or goods to barter for them.

On the other hand, there is always the remote chance that most countries will be so hopelessly reactionary that they will go back to the old principles of letting people acquire property and of letting businesses remain independent, so between the lot there may be enough people who can afford to travel by air, either for business or pleasure, to maintain quite a big air transport business.

Personally, I am absolutely neutral. I am no politician and I really do not care whether I can make enough money to pay for an air voyage to see my many friends in Australia and my few remaining friends in the United States, or whether some kind friend who happens to be a Deputy Kommissar for some Department of a National-Socialist Air Line wangles a ticket for me. One way and another I have had so much free transport by air, land and sea, through the kindness of various Governments, including our own, that I have come to the conclusion that a seat in a car or a railway carriage or an aeroplane feels very much the same whether it is your own or you hire it or it is given to you. The great thing from the point of view of air transport is that there should be enough people and goods to be transported and enough safe aircraft to transport them.

CHAPTER VIII.—SPEED IN AIR TRANSPORT

This is no place in which to discuss or argue the cost of Air Transport or what can be made out of pence-per-ton mile, but there obviously must be a big difference between high-

speed transport and slow transport. I think that probably the high-water mark of high-speed transport for quite a while will be that of the branch of Boa which ran Mosquito services between Scotland and Sweden about 1943-4.

For a long time few people knew about it except the Germans. It was one of those delightful things that my late lamented friend, W. E. de B. Whittaker, used to call "secrets known to everybody but ourselves." Of course, the Germans knew all about it because they were free to walk about in Sweden and knew all about the deals that we were doing with the Swedes and keeping going with the Mosquito service. But when we were allowed to talk about it there was quite solid satisfaction in being able to assure audiences that in spite of all our modesty we were running a regular air transport service which was some hundreds of miles an hour faster than any run by any other country. The Mosquitos were, in fact, doing 400 m.p.h., and then some.

There is a delightful story about two gallant men, an Englishman and a Swede, who had to get to Sweden to fix up an important deal with a Swedish firm to stop certain materials from getting into the hands of Germans. The only way they could do it was by Mosquito, and, as most of my readers know, the Mosquito is a somewhat exiguous two-seater. So they took these two sportsmen, rolled them in eiderdown quilts, pushed them into the bomb-bay of the Mosquito, and shut the doors on them. One of the BOA people said, "We did give them telephones so that they could chat with the pilot and the navigator." They got there in time, they fixed the deal, and said that they had never had a more comfortable journey by air. But if the Mosquito had been obliged to do a belly-landing, the two adventurous gentlemen in the bomb-bay would just have been rubbed off on the ground.

How fast those Mosquitos can fly is shown by the fact that one night when there was something very important on, one of the BOA pilots flew to Sweden and back twice in a night. When one thinks of the leisurely progress of our luxury liners to the Baltic and how long they took to get to Sweden the feat does strike one somewhat.

That is precisely where a clear division comes between air transport for high-speed mails for example, and air transport for passengers.

In 1934, Sir McPherson Robertson, the Candy King of Australia, put up a £10,000 prize for an air race between England and Australia, actually between Mildenhall, which was our biggest aerodrome, and Melbourne, his home town. The winning machine, a De Havilland Comet, took 72 hours over the journey, and its average speed was 160 m.p.h., start to finish, including all stops.

If the Government at that time had been intelligent enough we should have had within three months a regular Air Mail service to Australia taking 72 hours in each direction, and carrying mails and samples at very high rates. To-day there is no reason why, when the Japanese have been cleaned out of the Netherlands East Indies, we should not have a Mosquito mail service between England and Australia which will take 36 hours in each direction. That is quite a moderate estimate, because it only means 320 m.p.h., and that is remarkably slow for a modern Mosquito. That means 24 hours to Calcutta, 15 hours to the Cape.

Just by way of showing what could be done if there were no obstructions, four Mosquitoes of R.A.F. Transport Command, flew one day in June, 1945, from England to Karachi, the westernmost port of India, in 13 hours—thus confirming handsomely my arguments based on the MacRobertson Race. Also, in December, 1944, an Empire flying-boat belonging to BOA, flying night and day, and stopping only three times to re-fuel, flew from its port in the West Country to Karachi in 34 hours—a very good show.

I suppose that most people know that Imperial Airways, the moving spirit in which was Major George Woods Humphery, under the august chairmanship of Sir Eric Geddes (since deceased), built up our Empire Air Route to India and Singapore, where the mails were taken over by Qantas Empire Airways, Ltd. (Qantas stands for Queensland and Northern Territories Air Services), with Australian-owned aircraft and Australian pilots. Woods Humphery was squeezed out of Imperials by political manoeuvres, and he heaped coals of fire on his ungrateful country by originating and organising the Atlantic Ferry, which in later developments brought some 20,000 warplanes across the Atlantic by air.

Hudson Fysh, who founded Qantas in 1919, and has run it ever since, started in 1943 a direct non-stop air line between Ceylon and West Australia, flying over Cocos Island as an emergency landing-place—so as to keep out of the way of Japanese interference from the Netherlands East Indies. That was, and at the time of writing is, the longest (3,000 miles) non-stop air line in the world. Thus we have had the fastest and longest air lines under the British flag.

Hudson Fysh was aiming, early in 1945, at having a regular air mail service, with Avro Lancaster bombers, converted for civil use and called Lancastrians. He reckoned on running a service regularly from England to Australia (Sydney) on a 63-hours schedule, carrying some tons of mails and a few (perhaps six or seven) passengers, before the end of 1945.

In May, 1945 the first through Lancastrian flew to Sydney in 70 hours. The return through mail left on June 1. It arrived in London on June 8. Enquiries discovered that some bright lad at Lydda in Palestine had off-loaded the Australian mail to make room for some higher priority—a Major-General or something. Which makes me wonder whether air mails are to be held to ransom in Palestine, much as King Solomon made his vast wealth by taking toll of caravans between Assyria and Egypt—a practice which continued until Sennacherib liquidated the obstructionists.

People have asked me why there is all this need for high speed air-mail when one can send cables or radio messages. The answer quite simply is that in big business transactions there are certain documents which have to bear signatures. A firm quotation or a firm inquiry for big business must be signed. A contract to do that business should be signed. A bill of lading for important cargo going by ship has to be signed. Moreover, payment for goods is in many cases made against receipt of bills of lading. Those bills of lading can be sent by high speed air mail and the goods thereupon become the property of the buyer and payment has to be made as from that date, whereas the goods themselves in their ship may be a month or two arriving.

Also there are samples. Manufacturers here who want to do an important deal in Australia or in India or in New Zealand would be willing to pay any price for transport to save a week

or three weeks or four weeks in getting the samples there and getting the order back. There are cases in which important pieces of mechanism may be needed to get a factory or a mine or something of that sort going, and that piece of machinery may be worth much more than its weight in gold, and its transport may be worth any money. Look at the history of the Bulolo Goldfields in New Guinea to see what people will and can pay for air transport over a route which takes 35 minutes by air and three weeks by bush tracks.

Then there is the question of high-speed passenger transport. There are always people who will pay very high prices for very high speed. A friend of mine in one of the big shipping companies put it beautifully. He said, "There are two classes who will pay any price for high-speed transport. There is the important business man who must get to a certain place as quickly as possible. He may want to pull off a big deal, he may want to stop the collapse of a firm, he may want to get a factory or a mine going, and the cost of getting there quickly is no object. Then there is a quite distinct class who will pay any price to be transported as quickly as possible from one place to another so that they can do nothing when they get there."—He was not quite certain which class is the larger!

On this passion for speed at any price there is a story which always pleases me. A certain Chinese mandarin, in the days when life in China was large and dignified, came to the States on some mission. He was received at San Francisco, or thereabouts, by a very important personage and was escorted to a luxury car to go to the City Hall, where he was to have a Municipal reception. The car whirled him through back streets and round corners, and the official who was escorting him explained that by going round this way they would save five minutes over going by the main streets and through trolley cars and heavy traffic. When they arrived at the City Hall, somewhat shaken but with his dignity undisturbed, the mandarin got out, turned courteously to his escort, and asked, "And now what will you do with those five minutes?"

Nevertheless, speed for speed's sake is fun and there are times when it is a business benefit. So there will always be a demand for high-speed air transport.

CHAPTER IX.—TOURIST TRAFFIC

There will also be a demand for slow speed air transport. Some time early in 1944, when people were already beginning to talk about air transport after the war, Mr. Jacobs, a friend of Dr. Lewis, of N.A.C.A., paid me the compliment of coming to see me at home to chat over prospects generally. He is recognised as one of the leading practical aero-dynamicians in the United States and has a high reputation for the accuracy of his calculations and of his forecasts.

He told me that he had worked out that a passenger aircraft could be built to carry 60 passengers, seated in 15 rows, two and two on each side of the gangway, at 2 cents per passenger per mile, and make a profit.

He said that they would have just the same comfort as in an ordinary motor-coach. The aircraft would have two very big engines instead of four fairly big engines, because the care and maintenance and service for two engines is cheaper than for four, regardless of the relative sizes of the engines.

He said that such an aircraft would be in fact simply an aerial tourist vehicle. It would run short hauls of about 250 miles each, so that it would carry as much pay-load and as little gasoline as possible. He visualised starting from London, taking a hop to Paris, spending a night there, hopping on to Madrid next day, spending a night there. Next by way of North Africa to Athens. Then perhaps to Rome. Then there might be a call at Florence, a trip along the Riviera and back to Milan. Then the tour would go up the Adriatic to Vienna. And then across to Germany to have a look at the ruins of Berlin. And so back to England.

I suggested that the tourists might like to have a look at the ruins of London, too. But, being a polite visitor, he said that there were not enough ruins to make a sensational impression.

Now I think that such a suggestion is much more like practical commercial Air Transport than are Major Severski's hare-brained notions of Air Transport with ships of enormous size and colossal speed. Severski certainly has and always has had bright ideas. But, and here I think the U.S. Army and Navy technical people will bear me out, Severski's prophecies have

never been borne out by his performances. Still, there is always use for men with vision, and there is nothing like hitching your wagon to a star. You do get further that way than by merely staying put.

But I never could see much fun in Severski's enormous long-range kites which would carry so much gasoline that there would be about enough accommodation for one passenger and a monkey. Carrying his ideas to their logical conclusion one arrives at an aircraft which starts off from a certain place, goes round the world at the same speed as the sun, and lands back where it started non-stop.

I think that Mr. Jacobs' joy-ride air-coach is a much more pleasant notion. My idea of air travel has always been to fly as near the ground as I could and watch the old ladies hanging out their washing. Cruising over dense clouds never appealed to me. And I hate flying blind.

Obviously high-speed mail planes, and high-speed passenger transport planes intended for very important personages (the V.I.P.s or Vipers of war-time traffic), must go through everything. And if there be ice in the clouds then they must go above it and get there as quickly as they can to keep ice from sticking to them. And that being so they must have pressurised cabins and all the other discomforts of an air-conditioned home. For myself I prefer God's clean air, even if slightly rarified at 10,000 or 12,000 feet. And I prefer it still more at about 2,000 feet, even including the bumps.

Naturally there is the much wider question of air transport across the great oceans and the inter-Continental and trans-Continental plains. Then there does arise the question of whether we shall have very big aircraft or aircraft of such sizes as suggested in 1944-45.

Here there are two distinct schools of thought. One side is able to prove arithmetically that a big aircraft with a lot of power and a lot of passengers is more economical to run than a number of small aircraft. That remains to be seen, because so far nobody has built an aircraft to carry 100 passengers. But my own feeling always has been that the great success of air transport will be through frequency of service as much as speed.

I have always resented having to get to a railway terminus half-an-hour, or in war-time an hour-and-a-half, before the

train is timed to start, just because the railway company thinks that it ought to start at that time. Either I like to get into a car at my own door and start when I feel like it, or I like to go down to a Tube station and take the next train, regardless of the time. I am quite sure that when air traffic between here and the Continent is re-established people will not want to go to the air terminal station wherever it may be, at a specific time and wait for a machine to start if the Chief Dispatcher thinks that it ought to start at that time. They will want to go there and take the next plane to Paris, Rome, Berlin, Amsterdam or what not—possibly even to Lublin or Dublin or Moscow.

Years ago, in 1929 or thereabouts, the Luddington brothers started the grand idea of running a regular line between Washington and New York with the motto "Every hour on the hour." And our aircraft as air transport develops ought to start in the words of the historic railway porter to the enquiring passenger:—"At quarter past; 'alf past; quarter to; and at." People do not want to hang around until a big machine is filled, they would much rather go by a smaller one within the next few minutes.

Frequency of service, reasonable comfort, and above all safety, will decide whether air transport is to be a commercial success or not. In other words—Safety, Speed and Service.

As a last word on the Conquest of the Air, let me recommend to all Air Transport operators of all nations one simple maxim: "Mails may be lost but they must never be delayed. Passengers may be delayed but they must never be lost."

In my young days, largely among railway and shipping people, one of their Articles of Faith was embodied in the phrase—"The mails must go through." And at whatever cost the mails went. Ordinary passenger boats might be held by a gale but the mail boats smashed through it—I know, I have been in them. Whatever happened on the railway, fog, snowdrifts, anything, the mails had to go through. Before those days even the old coaches had the same romance attached to them. And Rudyard Kipling embodied the faith in his poem of the native runner with the Overland Mail. Therefore as a parting word on this subject I say: "Get your mails through. Take care of your passengers." Then you will be getting on towards winning the War with the Air.

CHAPTER X.—AIR FREIGHTING

Apart from passenger traffic, or at any rate high-speed long-range mail and passenger services and medium speed short-haul tourist traffic, there are great possibilities in heavy freight traffic at slow speeds. And we have to conquer the air to get the best out of this end of the business, too. Very early in the game of Air Transport a few wise men saw its possibilities, but they had to work hard for a long time to get other people to see with them.

The first person whom I can remember as going into the problem seriously was Flight-Lieut. F. M. Dyott, who, after being invalided out of the Royal Naval Air Service in 1917 or early 1918, went climbing the Andes in Peru, convinced that Air Transport could be made to pay better in bad flying country than in good. He told me, when he came home, of one place which he had discovered, where there was a mine perched on a small plateau, almost a ledge, some 10,000 feet or so up in the mountains, which could only be reached by mule-track in about ten days' march, up or down, from the nearest port. An empty aeroplane could fly up to it in half-an-hour or so. When loaded the same aeroplane could glide down to the port in about twenty minutes.

There was a paying proposition in Air Transport ready made. But Dyott could get no support for his plans. And yet, after 1918, aircraft makers of all countries sent highly expensive "missions," financially backed or, at any rate, politically sponsored, to all the countries which had remained neutral—and there were lots of them in 1914-18—offering them ex-Service aircraft almost as a gift. In fact the British Government did make presents of some hundreds of quite useful machines, chiefly D.H.9 two-seaters and S.E.5a single-seat freighters, to various British Dominions—South Africa, New Zealand, Australia, and the Indian Princes were among them. The French and Italians practically gave machines away in South and Central America and in China. But always the idea was to help those countries to build Air Forces and to equip themselves for Air War.

Nobody thought of Air Transport, least of all Air Freight-ing, except the Germans, who, in spite of being forbidden by the Treaty of Versailles to build anything with more than 200 h.p., managed by about 1925 to supply brand new aircraft

for, and to have a hand in the management of, Air Transport lines all over the world, wherever flying had started commercially. The history of the world's air lines is particularly interesting and informative on this subject. But even the Germans did not, for quite a while, grasp the idea that short-haul, very slow, freight routes up mountains or across narrow waters might be made into a sort of aerial gold mine.

So far as I can remember the first Air Transport to be organised specially and almost wholly for freight was that from Lae and Salamaua on the coast of New Guinea (where the Australian Army and Air Force did so much fighting in 1943-44) up to the Bulolo Gold Fields, some 5,000 feet up and about 20 miles away from the beaches. This territory, which was German in 1914, was mandated to Australia in 1918, as it had been captured by Australian troops from the German settlers and missionaries and gold-diggers in 1915 or so.

Here the aircraft flew loaded both ways—they carried supplies and machinery up and gold down. They also carried a few passengers each way, but primarily their job was freighting. The aerodrome up top was at a place called The Wau; and in more modern phraseology it was a wow. All aircraft landed up hill, regardless of the direction of the wind, and took-off down hill. The so-called aerodrome on the top was only about 300 yards long in any direction, and it was kept as a place for manoeuvring and parking, as it was the only patch flat enough for an aircraft to stand without rolling off.

A pilot landing an aircraft had to keep his engine going to stop it from rolling backwards, till he climbed to the more or less flat patch on top. If his engine cut out while taking off down hill "like the Gadarene swine," as one pilot who knew the place said to me, he just ran over the foot of the hill into the trees. Then he and his friends hauled the wreckage to the top of the hill, rebuilt it in a few days, or a few weeks, and tried again. Very few people were killed in these performances.

At first the aircraft were all sorts—old D.H.9s. Avro 504s, and such, mostly operated by lone-hand venturers, such as Ray Parer and Jerry Pentland—legendary figures in Australian Air Transport. Then Guinea Airways was formed, and B. E. Cross, the manager, made a business of freighting. He bought single-engined Junkers monoplanes from Germany, with hatchways through which big chunks of machinery could be put. He

bought a three-engined Handley Page biplane which carried big loads, but in small pieces. It finished up in the trees below the Wau. He bought one of the first of the three-engined Junkers, and in it took a Ford car up to the Wau. That is another of the outstanding ventures in the history of the worlds air lines.

When Cross was in England, somewhere around 1930, I think, he tried to get one or two firms to build special freighters for the Guinea Gold traffic, but nobody would look at a "one off" job, and nobody had the foresight to see that freighters, as a special class of aircraft, would be worth while, if somebody went out and sold them.

The Germans developed the Ju.52 more by a process of evolution than on purpose for freighting. N. S. Norway, better known to-day as Neville Shute, the writer of the world's best air novels, built the Airspeed Ferry, for Sir Alan Cobham's joy-ride circus. It would have been ideal for short-haul heavy-load work, for it was cheap to build, to repair, to maintain and to run.

In 1929 H. P. Folland designed and built at the Gloster Aircraft Co., for The Air Survey Co. Ltd. (Major Hemming and Mr. Alan Butler's venture) a special photographic biplane which also had great possibilities as a freighter. And in 1934 the Bristol Co. produced the Bombay, intended as a troop-carrier but used largely, especially in North Africa and the Middle East and in India, as a freighter. It was deadly slow, but it got there.

Then in 1944 the Bristol people brought out a freighter, designed for the job to be as light as could be in itself—without the weight of retractable landing gear and such gadgets—and to carry the biggest possible load. It is a grand craft for its job.

It has hatches to take loads nearly as big as itself and it has high-lift wings to take loads nearly as heavy as itself. And compared with the cost of running the high-speed stuff it is amazingly cheap.

Here then is another step in the Conquest of the Air, in that instead of viewing Air Transport purely as a means of getting from A to B at the highest possible speed we are beginning to think of using the air as the cheapest and surest way of carrying goods.

Many years ago the world's international financiers discovered that sending their precious, and intrinsically useless, gold by regular air lines, instead of by road, rail or sea, was safer, though not cheaper. Plesman, the big chief of K.L.M., told me, when the great bankers were juggling with gold-balances and he was very busy for a while, that he had carried the same boxes of gold back and forth between Paris and Amsterdam half a dozen times in as many months. And there was the famous and funny incident (the exact word) when several boxes of gold which were being brought from Amsterdam to London on a bumpy day took such a jolt that they went up in the air and made a hole in the floor when they hit it again so big that they fell through it. The pilot, knowing nothing of this, went on to Croydon, and when he got there the gold-cupboard was bare. But, such was the honesty of the good folk of Holland that the boxes were found and returned to their owner.

We can only hope that air freighters of the future will be put to some use which will do more good to the people of the world than helping the gambles of international finance. There will be plenty of work for them while Europe is being rebuilt, and railways, roads and canals are still suffering from the destructiveness of that foolish animal which calls itself *homo sapiens*—the silly sap.

CHAPTER XI.—SCIENCE AND EDUCATION

The leading serious newspapers of this country towards the end of 1944 published many letters by eminent persons, among them scientists, on the subject of higher education for aeronautical engineers and the higher development of the science of aeronautics. Some of these writers even went so far as to advocate the foundation of a completely new University devoted entirely to the education of aeronautical scientists and engineers.

The lamentable state of ignorance which allows aircraft designers and production engineers of aircraft factories in all countries to produce the curious edifices which we happily call

aircraft to-day certainly does show that there is a great need for the education of aeronautical engineers, and that there is an equally great need for a greater store of science in connection with the design, construction and operation of aircraft. In the earlier chapters of this book I have shown, I hope fairly convincingly, some of the lines of thought in aircraft design and construction where there is the greatest ignorance, and along which there is need for much more experiment and research. But I much doubt whether that knowledge can be gained any better in an establishment devoted entirely to aeronautics than it would be in an aeronautical department of the scientific or engineering schools of one of our greater and older Universities.

The idea strikes me that a University of Aeronautics, organised for that purpose, might well produce a type of pseudo-scientist who would suffer from hardening of the brain. One finds traces or threats of that sort of mental degeneration, I can hardly call it development, in such organisations as the Royal Aircraft Establishment at Farnborough or in the National Physical Laboratory at Teddington. And one probably finds it equally in specialised research establishments in any line of business apart, possibly, from the research departments of the great commercial firms or of those wicked things called Trusts, which maintain a staff of highly trained, though generally self-trained, specialists in research along the lines in which that particular business or Trust is concerned, and spurred by prospects of reward in commercial competition.

This hardening of the brain is analogous to the mental processes which take place wherever a number of people are gathered together rigidly in research along any one line. One finds it among the monks in the monasteries of the various religions, probably all the way from Lhasa by way of Mount Athos to Maynooth. One certainly finds it among little coteries of Classical scholars in the older Universities, and I fear that it exists even among the engineering faculties of the Universities.

But all these specialists in the older Universities, and perhaps even more so in the younger and less considered Universities, have at any rate the advantage of having to come in touch with specialists in other lines, which gives them a chance of avoiding complete ossification. On the other hand, judging

by what I used to know of the old Royal Aircraft Factory at Farnborough, and the little I saw of it after it became the Royal Aircraft Establishment, and what I hear about it since the so-called aeronautical scientists have had more of a free run during the war years, the danger of a specialised, segregated, one-ideaed crowd of young men with a one-eyed outlook being taught by a number of estimable middle-aged or elderly gentlemen who have no idea of anything outside aeronautics, and precious little idea of anything inside it, is not encouraging to a belief in an educational establishment devoted solely to aeronautics.

The wisest view of this idea, and, I should think, the last word on it, came from Professor H. E. Wimperis in a letter to *The Times* on December 16, 1944. In it he said:—

“(1) Is it certain that existing educational institutions could not do all that is needed? (2) How would its teaching cost compare with that ruling elsewhere? Neither was answered in the Fedden Committee’s report.

“The Rector of the Imperial College of Science and Technology has in effect replied to both. For about a million, he implies, the Imperial College could be equipped to cater for the aeronautical industry without detriment to its present duties in respect of other not less important industries. This compares with the £2,610,000 needed for the new college. In annual cost the difference is even greater. The average ruling at Imperial College in all faculties in 1938-39 is given at £189 a head—the Fedden Committee’s estimate is £967.

“If these answers do not show the new scheme to be probably redundant and certainly extravagant its sponsors should surely explain why? Feeling against the scheme is widespread but it presumably has some sponsors. One would have thought, so since all the members of the Committee signed the report.

“The Ministry of Education has been invited to foster the new venture, but it has other hungry mouths to fill from a rationed dietary, and their owners may well view with apprehension this patently gravid cuckoo flying near the nest.”

That, I think, is a convincing argument, besides being a pretty example of irony and wit. Probably by the time this book appears the question will have been settled. But a glimpse

of ancient history is always a good thing when looking to the future. And the idea of spending close on £1,000 a year apiece on educating draughtsmen in the hopes of discovering a genius among designers is fantastic. In itself the task seems to approach the conditions of Basic Research as defined by my friend the scientist hereafter.

Consider for a moment what is the so-called science of aeronautics? In the first place, what is science? Literally translated, science means knowledge. And I find that the more that honest men, other than quack scientists, know about science the more ready they are to admit, or even to proclaim, that they know nothing at all about it. A really good practical scientist is much keener on research than on proclaiming his vast knowledge of his subject. And research is an honourable acknowledgement of lack of knowledge.

There are, as I have several times said in print, two kinds of research, *ad hoc* research and basic research. I have defined *ad hoc* research as looking for a needle in a haystack when one knows that there is a needle there, whereas basic research seems to me to consist of turning over innumerable haystacks on the off chance that there may be a needle among them.

I put this definition light-heartedly to one of the few men concerned with aeronautics whom I respect as a scientist, that is, a man who has real knowledge. He replied that my definition was good enough, but I had evidently forgotten the existence of the electro-magnet, which would extract my needle, or any quantity of needles, without any need to turn over haystacks.

He added that he knew of no classic definition of the word research. He had looked in Webster's Dictionary, where he found "critical and exhaustive investigation having for its aim the discovery of new facts and their correct interpretation; the revision of accepted conclusions in the light of newly discovered facts; and the practical application of such new or revised conclusions." That, he said, was satisfactory except for the last clause, which is what he would have called "development."

He then gave six definitions of the various uses of the word research as follows:—

Research:—Scientific investigation directed to the discovery of new facts by theory and experiment.

Pure Research :—Research conducted without reference to the usefulness of the outcome. Much of pure mathematics, for example, the bulk of the theory of numbers and of the mathematical theory of logic, can be classed as little more than rather austere amusement.

Applied Research :—Research directed towards practical ends; that is, pure research debased by being unexpectedly found useful. (That, I think, is a beautiful touch of humorous irony.) And he adds—For example, the mathematical theory of hydrodynamics, originally the plaything of the Victorian mathematical giants, but later the basis of aerodynamics.

Industrial Research :—Research directed towards the improvement of the products of an industry or industries. Usually performed either in the laboratories of firms, at institutions financed by an industry, or in laboratories under the Department of Scientific and Industrial Research. (That is the kind of research to which I have referred above as being generally financed by big industrial firms, monopolies or Trusts.)

Ad Hoc Research :—Research put in hand to solve a newly arisen practical problem as distinct from research forming part of a plan to realise a long-term objective. In the aircraft world a mysterious failure of an aircraft structure in the air would be an occasion for *ad hoc* research; the achievement of lighter, stiffer, stronger structures would, however, be the subject of applied research and development. (See below.)

Development :—The application of the results of research on design and the process of improvement of design in the light of experience and repeated tests.—The boundary between research and development in a particular field is generally vague.

Now there you have a clear exposition of scientific research by one of the best brains in this country. And that state which is called science, in any line of business, that is to say real knowledge, can only be achieved by a vast amount of such research as that set forth hereinbefore. Consequently we do need research establishments. But those research establishments should not be segregated into a sort of aeronautical monastery, they should be kept as fluid as possible and as much in contact as possible with other sciences.

When one looks at aeronautical science as a whole one sees that it is made up of bits of older sciences which have been

expanded and have been applied to the air, and have added unto themselves knowledge gained from the action or reaction of the air. Then if one collects all these added bits from all the other sciences, and leaves out those parts of the older sciences which do not apply to the air, the result might be called aeronautical science.

We may take some credit for the fact that our Royal Aeronautical Society, founded in 1865, is the oldest organisation in the world to be concerned with the science of the air.

The basis of all aeronautical science is dynamics, which is itself a branch of general science. Therefore the science of aerodynamics deals with the action or reaction of the air on all forms of aircraft from the Chinese kite of thousands of years ago to jet propulsion aircraft or air liners or the biggest air-ships of to-day.

Because air is a fluid, aerodynamics is a branch of hydrodynamics, and to hydrodynamics knowledge has been added by discovering the effects of air on solid bodies. And that knowledge is complicated by the fact that air is easily compressible but water, for ordinary purposes, is not.

How much there is still to be learned about aerodynamics is shown by the fact that two of the greatest aircraft design and constructional firms in the United States, Boeing and Consolidated, have made the Fortress and the Liberator, which are utterly unlike one another in their apparent principles, and yet, with the same engine power in each, their performances are almost identical. In fact, the one which has obviously the worse streamline shape is slightly faster than the other.

In the period between wars so-called aerodynamic scientists of considerable eminence argued about the highest speed which an aeroplane could reach, and arrived at something like agreement by their calculations and experiments. But soon after war began their calculations were beaten in more or less regular steps. Similarly calculations about range in non-stop flying, for loads carried per square foot, and so forth, were consequently beaten. So we must admit that although aerodynamics may be a science it is certainly not an exact science.

Then we come to the calculation of stresses and strains in aircraft. If the science of aerodynamics can provide the knowledge of the pressure of the air on such things as wings, tails, fins, rudders, ailerons, and even on windows or panels in the

body of an aircraft, then calculations of the sizes of the mechanism and the materials which the designer may use safely is a branch of mechanical or structural engineering, just like building a bridge or a house.

Just by way of showing the sort of knowledge which is needed and does not exist, and is only learned at much expense of life and money; there was, comparatively early in the war, a crop of accidents in a certain type of aircraft caused by the life-saving inflatable rubber dinghy, which all aircraft which fly over the sea carry, coming out of its stowing space on the top of the hull of the aircraft and wrapping itself round the tail unit, with the result that the controls were locked and the machine dived into the ground. As these accidents generally happened when the machine was near the ground, either circling to land or taking off or performing some manoeuvre, most of these crashes were fatal because there was no room to get out with parachutes.

Then somebody had an idea, and experiments were tried in a high-speed wind-tunnel, with exact models of the aircraft. Somehow or another the discovery was made that there was a hole, for a good reason, in the outer covering of the machine, and that when the pilot made a certain manoeuvre air which entered through this hole put such stress on the housing of the dinghy, caused by suction on the outside of the housing, that the housing was blown open and the dinghy was sucked out.

When once this discovery was made pressure-heads were applied to the area near and round and on the casing, and a considerable number of pounds per square foot were discovered trying to suck the casing off. Then the experiments were repeated with that particular hole blocked up. The research men then discovered that, in exactly the same manoeuvre which pulled the casing off, there was now a pressure of about an equal number of pounds per square foot trying to force the casing on tighter.

Which only goes to show the prevailing ignorance of aerodynamics, and the need for more and more research to abolish that ignorance.

Practically ever since aeroplanes first flew things have broken in the air when certain unforeseen and unknown air forces have hit aircraft. Wings have folded up, tails have come off, and other strange things have happened. Quite a number of our

best test pilots have been killed through tails coming off. It has been a more common cause of death than has the wrenching off of wings. And the continual happening of such things is again proof of the lack of real science in aircraft design, and is further evidence of the need for higher education.

One of the greatest of our aircraft designers before and during the War 1914-18 George H. Handasyde, of the famous firm of Martinsyde, Ltd., used to say, only half in jest, that so long as the construction of an aeroplane was six weeks in front of the drawing office the machine had a chance of being good, but that if once the drawing office got in front of the construction, so that the machine was built according to the drawings, the machine was doomed. In other words he believed that experience was worth far more than book learning. And his theory was fairly well proved by the fact that the Martinsyde F.4 was the fastest fighter in the world when produced late in 1918, just too late to be used during the war. And when a modern high-powered engine (for those days) was put into one of them five years later it was still faster than any fighter in service in the R.A.F. at that time, with the same engine or with any other. Which is another example of the truth of the old saying that a pound of practice is worth a ton of theory.

My point is that, until theory approaches practice a great deal nearer than it does, flying is not going to be safe and is not going to be a commercial proposition, and we are still a long way from having conquered the air.

The engineering job of building an aeroplane is just a branch of structural engineering like building a bridge or a motor car. In fact the building of aeroplanes is somewhere between those two. The sub-science, or pseudo-science, of aerodynamics gives approximately the stresses and strains which will be set up in the structure of an aeroplane at certain speeds with certain loads if manœuvred in certain ways. And after that the design of wings and fuselages is mainly a bridge-builder's job. The wing of an aeroplane is, in essence, a cantilever bridge of a funny shape. Sometimes it is very funny for no better reason than that the designer wants to be different from everybody else.

You will find some aircraft with the leading edge of the wings at right angles to the axis of the body or fuselage, and the trailing edge of the wings swept forward from the butt, next

to the fuselage to the tapered wing-tip. You will find others in which the trailing edge is at right angles to the axis of the fuselage and the leading edge is swept back to give the needful taper towards the tip. You will find others in which the leading and trailing edge equally converge. And you will find others in which both edges are curved instead of being straight, so that they give what is commonly and erroneously called an elliptical wing.

Obviously they cannot all be right aerodynamically. They all seem to be fairly right structurally, because one seldom hears of a wing coming off an aeroplane in these days. When you consider the terrific speeds of aircraft now, and when one sees how thin the wing is when looked at frontwise, one is moved to wonder what is inside the thing which enables it to stay in place, especially when one knows that it has to be hollow enough inside to accommodate a whole row of cannon guns.

I remember when the first of the Hurricanes were being built, the designer, Mr. Sidney Camm, who has since produced the Tornado and the Tempest, showing me the girder structure inside the cantilever wings and remarking: "I don't know whether it will get off the ground, but I swear that it will never break." And he certainly has been better than his word, for not only do the wings not break but they fly as well as the best that anybody else can produce and a great deal better than most. And there you have not so much scientific theory as sound engineering knowledge.

As another example of the way in which eminent persons are apt to set too much store on book knowledge and the higher education on the scientific side let us remember that Mission of the British Aircraft Industry which went to the United States in 1942 to study their production methods. We had nothing to learn aerodynamically, apparently, because our aircraft were then, and still are, better than theirs. But they were making more than we were.

When the Mission came back one of the leading men in it stated at a meeting, with much regret, that one of the great U.S. firms had 1,300 draughtsmen on its pay-roll whereas, so far as he could discover, no English firm had more than 300. The obvious answer is that too many cooks spoil the broth, because in that particular line of aircraft we were, and are, notably ahead. Certainly we did not make so many aircraft in

that category as were made in the States, but apart from our aircraft having a better performance, and being faster, and lifting more, our aircraft cost very much less in man-hours per craft than those built in the U.S.A., which had more power to carry a smaller load more slowly. So, seemingly, although conceivably there may be truth in the saying, "In a multitude of counsellors there is wisdom," there does not seem any reason to believe that in a multitude of draughtsmen there is efficient design.

Whether the development, design and construction of jet planes is part of aeronautical science is perhaps difficult to say. Considered as aeroplanes they certainly are products of aeronautical science, but the jet business was tried out on motor-cars long before anybody thought of using it on aeroplanes. And rockets in particular go back thousands of years to the earliest Chinese fireworks.

Certainly the jet turbine, and the rocket-driven aircraft, and the V2 kind of rocket, have been developed purely for the purposes of air war, but I doubt whether we could properly claim them as solely the affair of aeronautical science. People were trying to produce internal combustion turbines before aircraft were invented. And the success of jet-propelled aircraft depends on the internal combustion turbine, which has delayed its production simply because nobody had discovered a metal which would stand up to the continued blast of flame. And so the success of the jet plane, at the finish, is due to our metallurgists.

In a somewhat similar way the science of meteorology is just as useful to shipping as it is to aircraft. It has been expanded very much by the use of aircraft, but the aeronautical side of it is only incidental. Meteorology, measured in terms of pounds, shillings and pence, probably earns more money for the farmer than it does for Air Transport.

Thus you see that in many ways science has been advanced by aeronautical needs pushing along the research workers, or making actual discoveries on its own. Therefore we cannot fairly claim that knowledge gained in this way is an advance in aeronautical science.

Somehow whenever this question of higher education crops up I am always reminded of the lady of a big House in Ireland who, one morning, noticed that the housemaid had been

more than usually slack in her dusting. 'So the mistress called the girl over and, using her finger, said to the girl: "Look here, Mary, I can write my name in the dust on the piano." And Mary replied: "Begob, ma'am, education's a great thing!" And certainly education or science without masses of practical knowledge and experience is just about as useful as writing one's name in the dust.

I hope that in the happy days that are to come, when we have flattened things out after the war and restored prosperity to shattered Europe, and when aeronautical science has given us aircraft which make air travel at least as safe as travelling by train, we shall induce states or counties or municipalities, or very rich men, if there should happen to be any left, to endow great research establishments which will, each and all, give us more and more knowledge of what the air does, and what we can do with it, so that in perhaps another hundred years or so we may claim that we have conquered the air.

When we can honestly make that claim we shall be ahead of any other form of transport. When there is an ill wind blowing, all ships other than the great ocean liners take shelter. When there is a sudden change of temperature which produces condensation in the atmosphere, which we call fog, the whole of the road and rail and sea transport of the affected area just goes hay-wire. One would have thought that railways, at any rate, could have been easily organised with reliable signals and telephone communication to run to ordinary schedules even in the thickest fog, and one would think that with the development of Radar ships would also be independent of fog. At the present rate of progress things look as if aeronautical science, young and ineffective as it is, will have conquered the air before other methods of transport have conquered the atmosphere.

PART 2.—THE LIGHTER - THAN - AIR WAR

CHAPTER I.—THE NEGLECTED AIRSHIPS

There is another phase of our war with the air, or of our conquest of the air, which must not be forgotten, although a good many readers will smile when they see the heading of this section. That is the possibilities of lighter-than-air craft. Most of the modern enthusiasts for air transport know little or nothing about what has been done in the past by lighter-than-air craft, dirigible balloons as they were called at first, dirigibles later, and airships before the war.

Some time before the War 1914-18, the U.S. took to calling their aeroplanes "ships," in a joking sort of way, much as we used to call our big ocean liners "boats" before the war, and as some Navy people still call our biggest and most useless warships, "battle boats." But I cannot remember any U.S. aviator ever calling an aeroplane an airship. That name has belonged definitely to automobile lighter-than-air craft.

There is no disputing that airships have been stupidly neglected by the governments of those countries which called themselves the United Nations. Fortunately for the shipping of the U.S.A. small groups of airship enthusiasts in the U.S. Navy, headed by Captain (now Rear-Admiral) C. E. Rosendahl U.S.N., managed to keep a small airship section going. They had the political backing of strong commercial interests in the Goodyear Rubber Co., of Akron, Ohio, the chief of which, Mr. Percy Litchfield, has, for more than twenty-five years, been keenly interested in airships—although the firm's airship business has been a very small part of their enormous trade in automobile tyres and all sorts of rubber products right up to rubber treads for tanks.

Another fervent backer of airships was Commander Jerome Hunsaker, one of the senior officers of the U.S.N. Corps of Naval Architects, who was early in on aircraft work, and had much to do with the N.C. flying-boats. Later he became a director of the Goodyear-Zeppelin Co., but in 1941 resigned to become a member of the U.S. Aeronautics Board.

Those who hold airships in contempt will be the better for knowing that after Lieutenant Read, U.S.N., and his four companions made the first crossing of the Atlantic by air in a Navy-Curtiss flying-boat (the N.C.4) in 1919, and were followed shortly afterwards by a non-stop flight across the Atlantic from Newfoundland to Ireland by John Alcock and Arthur Whitten Brown in a Vickers Vimy, about 100 people crossed the Atlantic by airship without accident before Charles Lindbergh made the first solo flight from New York to Paris, which was also the first non-stop flight from the Continent of America to the Continent of Europe. And, up to the outbreak of this war in September, 1939, many hundreds of people had crossed the Atlantic by airship without accident, whereas the number who had crossed or tried to cross by heavier-than-air craft, either East-West or West-East was trifling until the Atlantic Ferry Service was started by George Woods Humphrey, formerly of Imperial Airways Ltd., in 1940. Moreover the proportion of such venturers who fell in by the way was very high.

The younger people of the present day, that is to say, those who are twenty years of age or thereabouts, probably do not know that before the service stopped in September, 1939, the Luft Hansa airship, *Graf Zeppelin*, was running a regular service between Frankfurt, where its vast shed was, and Rio de Janeiro, Brazil, and that for some months before the war the *Hindenburg*, a larger and faster ship, had been running regularly between Frankfurt and the U.S. Naval Airship Station at Lakehurst, New York. Perhaps here at the beginning of this discussion is the best place to give a list of the figures. They will give a convincing foundation for arguments in favour of lighter-than-air transport.

		<i>Graf Zeppelin.</i>	<i>Hindenburg.</i>	<i>Total.</i>
<i>Flights</i>	... ..	590	63	653
<i>Flight Hours</i>	... ..	17,177	3,088	20,265
<i>Miles Flown</i>	... ..	1,053,618	209,527	1,263,145
<i>Passengers</i>	... ..	13,310	3,059	16,369
<i>Mail and Freight lb.</i>	... ..	253,330	41,161	294,491
<i>Ocean Crossings</i>	... ..	144	37	181

Now notice that those were all Atlantic crossings either North or South, except that in 1929 the *Graf Zeppelin*, which

first went into service in 1928, made an Arctic flight from Spitzbergen and back across the Arctic Ocean and a trip to Egypt and back, before it started on a trip all round the world. It started from Frankfurt, went across Europe to India, from India to Hong Kong and then non-stop from Hong Kong to San Francisco. Thence it crossed the United States and the Atlantic and so back to Frankfurt.

The *Graf Zeppelin* also, at another time, visited the R.A.F. airship station at Cardigan, near Bedford, and the little private aerodrome at Hanwell. Some few thousands of people saw that vast ship come into a space which looked as if there were hardly room between the houses at one end and the trees at the other for the nose and tail to get in. It was a masterly piece of handling, and the take-off was equally impressive. I imagine that all who saw it were convinced that there were possibilities in those big airships.

That piece of handling was probably only surpassed by the skipper of one of the Zeppelins which was surrendered at the end of the war 1914-1918 and was brought by its own crew to our airship station at Pulham, in Norfolk. The R.A.F. had a large ground crew waiting to take hold and walk it into its shed when it dropped its handling lines. But the skipper, with a pride of service which won the admiration of our own airship people, who were nearly all Navy men, drove the ship into the shed under its own power and put it on the floor without dropping a line. Such a thing could only be done with perfectly trained men and engineers. But it was a lesson in what could then be done with a big airship and a good crew.

It should be a much more valuable lesson to-day when, thanks to the reckless extravagance of war developments and the inefficiency of unlimited expenditure, our aeroplane transport people think in terms of runways between 3,000 and 5,000 yards long for a little bit of an aircraft perhaps 100 ft. long, when one could put a 300 ft. airship down in 800 yards with high trees all round.

A little later I will discuss the purely commercial aspect of big airships on the authority of figures supplied by Admiral Rosendahl. But first we may do well to take a brief look at what other airships have done.

CHAPTER II.—EARLY EUROPEAN AIRSHIPS

Leaving out the early attempts at airships which were built on the Continent of Europe, some of which never got off the ground, some of which caught fire shortly after getting off the ground, we come to the fact that little Senhor Santos-Dumont, who was also authentically the first man to fly a heavier-than-air craft in Europe, built a little airship in which he flew round the Eiffel Tower before anybody flew a heavier-than-air craft. But there is one thing which we must remember about all these early airships—they were all filled with hydrogen and were therefore frightfully inflammable. And just to make them a little more dangerous they all had petrol engines. Consequently, one of the most amazing things, almost miraculous, about the history of airships is how few airships caught fire and burnt up compared with the wholesale way in which heavier-than-air craft still burn up when they crack up.

The French Army had elementary airships as far back as 1908-9. There is no space here in which to record their names or histories. One or two of them caught fire in the air and burnt. I remember one particularly just before the French Aero Show of 1909.

With one exception all the French airships were of what is called the non-rigid type. That is to say, they were just gas-bags of more or less streamline shape with cars slung below them in which were the engines and the passengers and crew. Nothing was ever developed from any of the French ships so we need not spend space on them.

The Italians built a few non-rigid airships. They also developed a semi-rigid type, in which the gas-bag was built onto a long girder-like keel of steel tubes and wood, designed by a gentleman named Forlanini, which did moderately well.

We in this country made a few very small airships, all non-rigids. E. T. Willows, of Cardiff, built a little ship of only 30 h.p. which did quite well for what it was, and the Army built four or five non-rigids of its own at what was then called the Army Balloon Factory, later the Army Aircraft Factory, later the Royal Aircraft Factory, and now the Royal Aircraft

Establishment at Farnborough. These are of interest because from them descended the Blimps, which have been so useful in many ways.

The first Army airships were built by the Royal Engineers. The first served its purpose, and another was built, which its builders, in jesting bravado, called the "*Nulli Secundus*" (Second to None), whereupon *Punch* stated, with mock solemnity, that yet another was being built and it would be called "*Nulli Tertius*." After that came the *Alpha*, *Beta*, *Gamma*, *Delta*, and *Eta*—so called, I suppose, to show that the Sappers had some Greek.

The real airship development was done by the Germans. Graf Zeppelin, a veteran of the Franco-German War of 1870, built his first rigid airship in 1908. The story of its building is a romance in itself, and I am sorry that there is no room for it here. It is a story of immense courage, moral and physical, which overcame constant disasters and obstacles.

The Zeppelin frame was a kind of basketwork of aluminium drawn into a channel. Inside it was a number of cheese-shaped gas-bags, and the cars were attached rigidly to the girder-like keel, which itself was part of the frame and structure of the ship. Although the aluminium members of the hull were not disposed spirally, and therefore did not obey the same mechanical laws, the general idea was rather like that of the geodetic fuselage of a Vickers' Wellington.

The size of an airship is visualised by quoting its length and cubic capacity. The diameter also comes into the calculation, naturally, but the two dimensions are enough to give a notion of its size. The first Zeppelin was 460 ft. long and had a capacity of 420,000 cubic ft. That was in 1908. By 1913, the *Sachsen*, which was built for passenger work, had a volume of 742,000 cubic ft. and was 492 ft. long. The *Z.I.* (Zeppelin I) had two Daimler motors of 85 h.p. each and the *Sachsen* had three Maybach engines of 150 h.p. each.

Even in those days the Zeppelins were singularly free from accident. At the end of 1913 ten Zeppelins had been built, four for the Army, two for the Navy, and four for passenger work, although that was then only of the kind which we should now call joy-riding. They did not go for long voyages, and were not run on a regular service. Nevertheless, although one

had wrapped itself round a hillside through being blown against it by a gale, the Delag Co., which was the passenger-carrying organisation (it stood for Deutsche-Luftschiff A.G.) had carried more than ten thousand passengers without injuring one of them. The L. II (Luftschiff II—the Navy's title) the second Navy ship, had blown up in the air over Johannessthal, near Berlin, with the loss of all hands, but that was the only loss of life in Zeppelins, up to the outbreak of war in 1914.

How good the ships were in the War 1914-18 may be judged from the fact that one Zeppelin started from a shed in Bulgaria, flew across the Mediterranean, over Egypt, all up the Nile, and across the Equator, to bring medical supplies to General von Lettow-Vorbeck in Tanganyika. The Captain received a signal when he got there that von Lettow-Vorbeck had been compelled to surrender, so the Zeppelin turned round and came back to Bulgaria unhurt, after dodging any of our patrols which went out to look for it—there was no radio-location in those days. Those who remember 1916-17 will recall how very annoying the Zeppelin raids were.

The Germans also made some good non-rigid airships, notably the type designed by Major von Parseval. Our Royal Naval Air Service bought one during 1914 and it did excellent patrol work over the Channel and the North Sea. They also had a French Astra-Torres which was useful.

Of these Parsevals there is a story which will bear retelling. The skipper of the R.N.A.S. Parseval was Commander Boothby, R.N., and he loved his ship. As soon as the fighting was over he dashed across to Germany to see his old friend, Major von Parseval, and got from him the promise of the loan of a Parseval to use in an expedition to the North Pole—to be financed in England. Boothby came back rejoicing, and in the Royal Air Force Club found an old friend and brother officer of airships, Eustace Moyes, majestically smoking a cigar in front of a large fire. Boothby dashed over to him and said excitedly, "Eustace! I've got the Parseval. You'll come to the North Pole, won't you?" And Eustace answered languidly, "But—er—my dear Boothby, why *should* we go to the North Pole? It's *frightfully* cold, and we don't know a soul there."—Which always seems to me the unanswerable argument against Polar exploration.

During the War 1914-18, Vickers, Ltd., of Barrow-in-Furness, Sir W. G. Armstrong-Whitworth, Ltd., of Newcastle, and Short Bros., Ltd., of Rochester and Bedford, built a number of rigid airships for the Navy, all of which were used for anti-submarine patrol, but not for bombing Germany. They covered an enormous mileage without accidents.

In 1919, the R.34, with Major G. H. Scott as chief pilot, accompanied by Brigadier-General E. M. Maitland, one of the Senior Officers of the Airship Service, and a crew of about 25, crossed the Atlantic, landed at Lakehurst, and returned safely to England.

After that we built the R38 and sold it to the U.S. Navy, but unfortunately it broke in the air over the Humber just off Hull. Air Commodore Maitland, with the Senior U.S. officer on board and 25 R.A.F. and U.S.N. people, were killed. There were about six survivors.

After that we shut down on building big airships until 1928, when Lieut.-Commander Sir Dennistoun Burney, ex-R.N., who had been knighted and given £400,000 for inventing the paravane, persuaded Vickers Ltd. to build another rigid airship and persuaded the Air Ministry to buy it. At the same time the Naval Airship Station at Cardington persuaded the Air Ministry to let them build an airship. Burney's ship was called the R.100 and the other the R.101. Otherwise they were known as the Capitalist Airship and the Socialist Airship.

The R.100 was designed by Mr. B. N. Wallis. It was built on the geodetic basket-like principle which was later worked into the Vickers' Wellingtons, and other aeroplanes. The engineer in charge of the construction was Mr. Neville Shute Norway, now known all over the world as Neville Shute, the novelist. That ship, with Major G. H. Scott as captain, flew to Montreal and back in 1929.

Soon afterwards, early in 1930, the Government ship R.101, which had constantly been denounced as unairworthy, started off for India carrying Lord Thomson the Air Minister and Sir Sefton Brancker the Director-General of Civil Aviation, and a number of its own technical people as passengers. It was wrecked and burned up on Beauvais Ridge with the loss of all on board except two airmen.

The Air Ministry then gave up all hope of airships. And the highly successful R.100 was pulled to pieces and its aluminium work was flattened out by a steam-roller on the floor of its shed and sold as scrap.

CHAPTER III—AIRSHIPS IN THE U.S.A.

In the United States a friend of mine, Mr. Harry Vissering, who was a friend of President Harding, persuaded the President in 1920 to demand the delivery of a brand new Zeppelin airship from the Zeppelin Co., ostensibly as "war reparation," but really to stop the French from destroying the whole of the Zeppelin works in mere spite, without caring about the knowledge which was to be got there. Consequently, the Z.R. III was built with all the latest improvements, and was delivered to the U.S. Navy at Lakehurst in September, 1924. This ship was later called the *Los Angeles* by the U.S. Navy. I was there when it arrived and was so impressed by it that I have been impressed by the possibilities of airships ever since.

It was flown across the United States to the Pacific slope a year or so later to impress the Pacific slope with the idea that war really existed outside of movies. Admiral Moffet, the chief of the U.S. Naval Air Service, went in the ship himself. Talking it over with him afterwards I said that I was surprised at the old ship being able to get over the Rocky Mountains. He said that she did not go over, she went through the passes, and then added in his usual quaint way, "Believe it or not, we had a man out at the bow and stern with a boat-hook booming her off the rocks as we went round the corners." I believe the ship did, in fact, go through one of the higher passes and not over the highest peaks, and that taking her through was quite a fine piece of airmanship.

After that the U.S. Navy had built for them the *Shenandoah*, which was lost in a storm with most of her crew. Then they had the *Akron* built by the Goodyear Co. She was lost in a gale through bad handling and not taking enough notice of the gale warnings. Her tail hit the sea and she broke

amidships. Admiral Moffet, one of the ablest and best beloved and most respected officers in the U.S. Navy, was among those lost. A good many others survived.

Then the *Macon* was built. This ship was filled with helium instead of hydrogen and was therefore non-inflammable. Also she had Diesel engines instead of petrol engines, which still further diminished the chance of fire. Some slight mishap occurred to the structure when she was cruising close to the coast of California, but the whole crew of the ship was got off unhurt, except one cook who jumped out in alarm and was killed by hitting the water. After that the U.S. Navy became disheartened, and in spite of the best efforts of Captain Rosendahl, as he then was, and Commander Hunsaker, no more big ships were built.

That was one of the greatest tragedies of this war. If we or the U.S. Navy had owned and operated big airships in 1939-40 we could have defeated the German submarine menace from the start. At that time submarines were not equipped, as they have been since, to fight it out on the surface with other craft. The airships could have controlled that fatal gap in the middle of the Atlantic between the limit westward of our big flying-boats and out-of-date bombers, and the limit on the U.S. side. So at the start of the war the U.S. Navy could have let us pay cash and carry, or could have lent or leased, a number of such ships to the Fleet Air Arm. And those could have covered everything between Newfoundland and Ireland.

There are a few of us in this country who have a clear conscience on that matter. Lord Ventry, a Guards officer, who served with Royal Naval Airships in 1918, has been a fervent believer in airships, and so are some dozens of that Service who survive to-day. With them I am proud to count myself, for at intervals during the twenty years between wars I have let myself loose in *The Aeroplane* in support of airships. And just as I was denounced as a warmonger when I advocated a powerful Air Force so I was denounced by aeroplane fanatics as a reactionary when I advocated the keeping up of an Airship Service.

Now we must have a word about the Blimps. Like so many ideas which have been successful in the U.S.A., they originated in England. The first airship of this sort was the idea of Commander Neville Usborne and Lt.-Commander de

Courcy-Ireland of the Royal Naval Air Service some time late in 1914. Their notion was to sling an aeroplane under the gas-bag of a small non-rigid airship, take it up when a Zeppelin alarm was given, hang around high up in dead silence until the engines of the Zeppelin were heard, after which the aeroplane crew would let go the gas-bag, start their engine by diving, and go off in pursuit of the Zeppelin.

It was quite a bright thought, and it might have worked for a while. Unfortunately Usborne and Ireland were killed when experimenting near Chatham with one of these things, the front sling worked according to plan and the back one did not. The aeroplane fell off the gas-bag and spun down out of control.

Then somebody struck the idea of slinging the fuselage only of an aeroplane, without wings but with rudder and elevators, under a gas-bag and letting the engine of the aeroplane pull the whole thing along, with the idea of searching for submarines round the coast within limited range. These things were at once a success.

One of the first of them came over the R.N. Air Station at Eastchurch and was perceived by the great Horace Short, the eldest of the famous Short Brothers, who exclaimed, "Look at that blimp." And the name stuck. Somebody later on asked Horace Short why he called it a blimp. His reply was, "Well, what else *could* you call it?"

The original blimps were improved by building special streamlined fuselages for them. Then bigger gas-bags were used and bigger cars underneath and twin engines. And by the end of the war a type had been evolved which could stay in the air for 24 hours on end. And they did very good work indeed. Some of them destroyed submarines. And, anyhow, no submarine dared to show its conning-tower if a blimp had been spotted through the periscope.

The type was adopted in the States and developed by the U.S. Navy along those lines. Since the start of this war in 1939—or, at any rate, since Mr. Roosevelt promised us "all support short of war," and I got into trouble for quoting a U.S. friend's paraphrase as "The U.S. is prepared to finance the war to the last Englishman"—they have been used along the Atlantic seaboard and the Pacific seaboard also. They

have spotted many submarines, and I believe they have destroyed some. So far as I know only one of them has been lost by anti-aircraft fire from a submarine. They have all been filled with helium so they have not been inflammable when they have been hit, but this one was unlucky and I believe had its car smashed.

One of the most ingenious types of airship, and one which I believe may still turn out to be useful, was evolved in the U.S.A. by a firm called the Metalclad Airship Co., of Detroit, the leading spirit of which was Carl Fritsche, one of the best known men in the U.S. Aircraft Industry. This ship has its envelope made wholly of very thin aluminium plate and strips of aluminium sewn together in a most clever way. The whole thing is made gas-tight inside, with, I believe, some sort of varnish or dope.

Only one has been built, a curious little chubby thing, only 146 ft. 6 in. long with a diameter of 52 ft. 9 in. That gives it a ratio of beam to length of 2.83, which is good according to watercraft ideas, and so probably right for low speeds in the air. Its cubic capacity is 202,200 cubic ft., its gross lift is 5.76 tons, and its weight empty is 3.98 tons. Its top speed was about 62 m.p.h. with two 200 h.p. Whirlwind engines.

This little ship went into service with the U.S.N. Airship Service in September, 1929, and was still in use as a training ship in 1938.

There is interest in comparing its size and performance with those of the Standard Goodyear Blimp. The Goodyear Rubber Co. started an offshoot called the Goodyear-Zeppelin Corporation, of which Mr. Percy Lichfield was President. One Vice-President was Commander Jerome Hunsaker, afore mentioned. In 1935 he was a member of the National Advisory Committee for Aeronautics to the U.S. Government. The other Vice-President was Dr. Karl Arnstein.

Their earliest Blimp, launched in July, 1925, was 110 ft. long and had a capacity of 54,000 cubic ft. and one 60 h.p. Lawrence engine. Up to June 1, 1929, it had covered 49,170 miles, chiefly on advertising stunts. Thereafter the firm built several of varying sizes, and in August, 1929, their latest, the Defender, was 184 ft. long, 45 ft. in diameter, had a capacity of 178,000 cubic ft. and two Wright 150 h.p. engines, a cruising

speed of 72 m.p.h., carried eight passengers, and up to June 1, 1930, had covered 51,800 miles.

At the outbreak of war in 1939, the Goodyear Co. owned and ran a fleet of five non-rigid airships, each of 123,000 cubic ft., 140 ft. long, 40 ft. diameter, and each with two 145 h.p. Warner engines. They had a top speed of 65 m.p.h. All used helium.

In the 12 years up to 1937, from the last figures which I have, since the original *Pilgrim* was launched, these ships had made 93,818 flights, they had flown 2,615,938 miles in 58,028 hours, and they had carried 250,051 passengers without a fatal accident.

Granted that they were only advertising and joy-ride craft, they do indicate a certain usefulness if further developed. And the lessons learned in handling those five little ships were of enormous value when the Goodyear Co. started turning out Blimps as hard as they could for Coastal Patrol in this war.

CHAPTER IV.—GERMAN AIRSHIPS BETWEEN WARS

After President Harding, U.S.A., had saved the Zeppelin Works from destruction, and the L.Z. 126 had been taken over by the U.S. Navy, named the Z.R. III and re-named the *Los Angeles*, had been delivered in 1924, a big popular subscription fund, known as the Zeppelin-Eckener Spende, was opened in Germany in the autumn of 1925 by followers of Dr. Hugo Eckener, who had been head of the firm ever since Count Zeppelin died. By the end of 1926 more than two million marks had been subscribed.

With this the building of a new ship was started. It was 772 ft. long, 100 ft. in diameter, and had a cubic capacity of 3,710,000 cubic ft. Its gross lift was 107 tons and its payload was 15 tons, besides a crew of 26 and fuel for 6,200 miles at 60 m.p.h. The top speed was 80 m.p.h. This ship was called the *Graf Zeppelin*. It made its first flight on September 18, 1928, went round the world in 1929, and from 1930 to 1936 was on regular service between Germany and South America.

It made its 100th crossing of the South Atlantic in November, 1935, and in December of that year flew its millionth kilometre. Up to then it had carried 10,400 passengers. It was withdrawn from service in May, 1937, after being in continuous use for eight years, during which time no major repairs were needed, and no accident had happened to any passenger.

When Dr. Eckener visited London during his round-the-world flight of 1929 he was entertained by the various Air Societies, after having been entertained by every Air Society in every capital he had visited. I met him first when the L.Z.126 (Z.R.III) was in the United States, and we were friends ever after. I went to see him when he arrived in London and asked him how he felt after his flight round the world. He said that the greatest trial was the number of banquets he had to attend. He added, in his quiet humorous way, "I think it shall be that if a man shall make something of note and shall have some popularity it shall be better that he shall have a good stomach than a good head."

After that performance Eckener was one of the most popular as well as one of the most famous men in Germany. In fact, he was so popular that although he never pretended to be a Nazi of any kind, the Party dared not neglect him, so at all the big functions of the Lilienthal Gesellschaft he was always a prominent figure. Everybody knew that he regarded the uniforms, the ceremonies, and the pomp and circumstance as so much play-acting which interfered with serious airship work.

When the *Graf Zeppelin* was out and about, a new ship the L.Z.129, appeared, and was called the *Hindenburg*, after the Field Marshal who was then the President of Germany. This ship was 803ft. long; 146.5ft. maximum diameter; and had a gas capacity of 6,709,663 cubic feet as a normal filling. But it was capable of holding a maximum gas capacity and overload of 7,062,802 feet. Its empty weight was 193 tons and its gross lift 212 tons. It was designed to carry 64 tons of fuel and oil, 7 tons of useful load, such as passengers, and 12 tons of freight and mail. The accommodation was that of a first-class liner and state rooms were provided for 50 passengers. Its engines

were four 1,200 h.p. Daimler-Benz 12-cylinder Diesel engines. The top speed was 84 m.p.h. and the cruising speed 78 m.p.h. The range was about 8,700 miles.

When the *Hindenburg* was out, the L.Z. 130, which was the 119th airship built by the Zeppelin Co., was put in hand. It was called the *Graf Zeppelin*, and was a successor to the old ship, which had done so well, or rather an *ersatz* for it. This new ship was 800ft. long, 135ft. maximum diameter and had a capacity of 7,877,020 cubic feet. It began its trial runs in September, 1938, but never went into regular service because of the burning of the *Hindenburg*.

In 1936 the *Hindenburg* made ten scheduled journeys from Frankfurt to Lakehurst and back. The demand for accommodation was so great that extra cabins had to be put in, and on its eighth journey to Lakehurst it carried 72 passengers besides a crew of 55. After its tenth journey the *Hindenburg* was put onto the South Atlantic route at the end of November.

In 1937 the *Hindenburg* again went onto the North Atlantic route, but at the end of its first crossing, when landing at Lakehurst on May 6, the ship caught fire and was totally destroyed. Of the 97 passengers and crew on board 35 lost their lives, including Captain Ernst Lehmann, the commander of the ship who was a pioneer of the Zeppelins. In fact Lehmann was rescued from the ship, not very badly burned, but he died a day or two later from shock, partly from the loss of his ship, which he knew would be the end of airships, and partly from the loss of his only child, a charming little boy, who had died a few weeks before.

How the fire happened nobody knows, but the opinion among my friends in the Zeppelin Co. was that it was caused by a static discharge of electricity, and not by sabotage.

Long before that disaster happened Dr. Eckener was negotiating with the U.S. Government for enough helium gas to fill the *Hindenburg* and the *ersatz Graf Zeppelin*. Mr. Harold Ickes, a member of the U.S. Government, into whose department this affair came, first of all agreed to supply helium and then, when everything was ready for delivery, with the helium in cylinders at a port in Texas (Galveston, I believe), he suddenly cancelled the contract. The *Hindenburg* was to have flown to Lakehurst and to have been filled with helium there, after which it was to "top up" with helium at the end of each

voyage, and a small supply of helium was to have been shipped to Germany in case of unexpected leakages. If that contract had been completed there would have been no *Hindenburg* disaster and the progress of airship development would have gone on, with much advantage to us.

Mr. Ickes' excuse was that a helium-filled ship might be a danger to the U.S.A., and that all helium was to be kept for U.S. airships. The notion evidently did not strike this acute citizen that by simply supplying helium the U.S. could learn at Germany's expense all that would be discovered about helium-filled ships, which knowledge could then be applied on the cheap to U.S. airships.

When Mr. Ickes cut off the helium gas at the main, Dr. Eckener allowed the L.130 (*Graf Zeppelin*) to do its trials with hydrogen, but it was never used on a regular service, because he had definitely decided that there was no future for hydrogen-filled ships. Wherein I heartily agree, and so I am sure does Admiral Rosendahl.

CHAPTER V.—THE CASE FOR THE COMMERCIAL AIRSHIP

The case for the airship as a commercial vehicle is very well put by Admiral Rosendahl in an article in *Colliers' Magazine* of June 10, 1944. He even challenges the Trans-Pacific Clipper flying-boats of Pan-American Airways in comparison with big airships. He argues that the schedule of the 1939 model Clipper flying-boats between San Francisco and Hong Kong (6,904 miles) was 6 days and 7 hours but their average time has been about 8 days and 8 hours. Based on the *Hindenburg's* average speed on a comparable route the 1936 model airship could make the journey non-stop in 4 days and 15 hours, so the airship would beat the Clippers to Hong Kong by 3 days and 17 hours.

The 1939-type Clippers' east-bound schedule was 6 days 20½ hours, whereas the actual average time was about 8 days 19 hours. The airship would make the same journey non-stop in 3 days 18 hours. The Admiral says that the 85,000lb. Clipper

boats on the Pacific and Atlantic in 1939 are called "74-passenger craft" but that no Clipper yet has been able to carry 74 passengers even a short distance over either ocean. In service, he says, the "average maximum available for pay-load" for this type in service for the 2,410 miles between San Francisco and Honolulu, is 6,985lb. westbound and 6,210lb. eastbound. Against that, in 1929 the 1928 model airship *Graf Zeppelin*, with only three-quarters of the Clipper's horse-power, flew 5,200 miles in 69 hours, between Japan and San Francisco non-stop, with more than 6,000lb. of pay-load.

Furthermore, he says that the first year in which the North Atlantic Clipper service was in being was between March and December, 1940, and that during that time $3\frac{1}{4}$ Clippers (I like that $3\frac{1}{4}$) flew 1,105,335 ton-miles of pay-load. Between March and December, 1936, the *Hindenburg* single-handed flew 1,016,850 ton-miles of pay-load over the North and South Atlantic. Thus one airship with a quarter of the combined horse-powers of the Clippers did practically as much as $3\frac{1}{4}$ Clippers.

Based on 1940 actual performance seven Clippers did the useful work of one 1936 airship. For good measure he adds this: "One airship, four engines, 4,400 h.p., 44 in crew. Seven Clippers, 28 engines, 42,000 h.p., 77 in crew."

He adds the further remark that relatively the Clipper is a flying "club-car" or "parlour-car," whereas the airship is a flying hotel. He also has unkind things to say about the difficulty in getting passengers in peace-time to face the Atlantic crossing in a flying-boat, even going round by West Africa and Trinidad, because the various hops mean routing passengers out at unholy hours, whereas in the airship one gets in and stops there till one reaches the end of the journey. Perhaps the unkindest cut of all is the remark that on four out of ten of the *Hindenburg's* trips to Lakehurst the ship departed on schedule when all commercial airplane flights were suspended because of bad weather.

Another interesting point is that on a recent "record" demonstration cargo flight a Martin Mars flying boat carried 13,000lb. of pay cargo non-stop for a little more than 4,000 miles in 28 hours. Admiral Rosendahl claims that a 10,000,000 cubic feet helium-filled airship (based on experiences of earlier

airships), cruising at an air speed of 75 m.p.h., would make the same journey in 56 hours, and carry 130,000lb. or *ten* times as much cargo.

Certainly when one starts multiplying up the number of flying boats needed to do what one airship can do, with the multiplied crews and fuel consumption and all, Admiral Rosendahl does present a fine case for the airship.

His article roused the wrath of Captain C. H. Schildhauer of the U.S. Naval Reserve, at that time on active service in the office of the Chief of Naval Operations. Admiral Rosendahl points out in an answer to his letter, that he played a big part in the establishment of the Clipper services, both Pacific and Atlantic, as an official of Pan-American Airways; after that he joined the Glenn L. Martin Co., the producer of the Mars Flying Boat, of which type the Navy has ordered 20 more for its Naval Air Transport Service, of which Captain Schildhauer was, when he wrote, an Assistant Director. Thus one may judge that Captain Schildhauer was at least as prejudiced in favour of the flying boat as Admiral Rosendahl is of the airship. And, as they were both writing of the civil use of the craft with which they were concerned in the Service, one might imagine that they were both infringing Uncle Sam's regulations, or what corresponds in the U.S. Services to King's Regulations, but seemingly that is not so.

Captain Schildhauer's argument was that the Clippers which the Admiral quoted were of an early type which did about 120 m.p.h., that their route was not equipped with apparatus for night-flying, and that it had not the "improved navigational aids of to-day." The current (June, 1944) schedule across the Pacific, including re-fuelling, is just about four times as fast as the 35 m.p.h. quoted by the Admiral. In fact, its over-all average is better than 200 m.p.h. between San Francisco and Hong Kong—that is if anybody wants to go to Hong Kong. Still, I suppose that argument would apply to a voyage from San Francisco to Australia, or New Zealand. He quotes a four-engine military transport which took my old friend Vice-Admiral Jack Towers, U.S.N., from Honolulu to Washington in May, 1944, in a total elapsed time of 26 hours 32 minutes, only 1½ hours of which was spent on the ground.

To this Admiral Rosendahl replied in July that he had never entertained any belief that an airship would try to force

the flying boat or any other airplane out of its proper field, but that he believed that the airship has its own place in air transport. He puts its most important qualities as safety, comfort, pay-load, dependability, economy, in which "the airship clearly has superiority" in long non-stop services.

Captain Schildhauer at that time put the slow speeds of the Clippers over the Pacific down to lack of competition or to "no competition other than the surface vessel." And to "no pressing need for improvement."

Admiral Rosendahl cuttingly remarks: "Such statements bespeak no good for monopoly. Possibly the advent of the airship will prove a great stimulant to flying boats." That is a point which might be taken to heart by some of our own people who are so keen on monopolies and Nationally-Socialistically owned Airlines. Further he remarks: "This is not the first time someone has compared the day after to-morrow's airplane with the day before yesterday's airship."

Admiral Rosendahl's last paragraph is worth quoting in full: "No one denies the flying boat may get a bit faster, but so may airships. We can use steamers, airships, and probably various kinds of airplanes in the Ocean Service. But if the case is so lopsidedly in favour of the flying boat, why does the mere mention of a programme of only some six ocean-going dirigibles cause such consternation in flying boat circles? Could it be that the airship really 'has something'?"

I think the most important point here is that until we go into building and operating airships nobody has a fair idea of what they can do. Many years ago I said that airships, like elephants, breed slowly and there is a long gap between one generation and the next, whereas airplanes are as proliferent as rabbits, and one gets several generations of them in one year. Even the Zeppelin, the ancestor of all airships, was the progenitor of only 120 ships, of which at least 100 were built during the war 1914-18, and were all nearly of the same type.

I doubt whether altogether there have been 40 different types of airships. On the other hand there must have been nearer 4,000 types of aeroplanes.

The airship alone among aircraft has the ability to stand still in its own element. It can rise and descend in a space very little larger than itself. If its engines go wrong it is not forced

to come down. And with helium gas and diesel oil it is practically non-inflammable.

Several of my friends, some of them very experienced aeroplane pilots, who have crossed the Atlantic by Zeppelin, say that it is by far the most comfortable method of travelling that they know. And those who crossed to Canada and back in the R 100 with primitive accommodation—and a very uncomfortable meteorological performance caused by lack of weather-warning and experience—say that theirs was a most comfortable voyage in each direction.

I commend the study of the possibility of the airship even in this country. I suggest that this information may appeal particularly to big steamship lines who are accustomed to handling craft of such dimensions and have along their regular route organisations which can handle such traffic. If the State is determined to have a monopoly of our overseas airlines it may consent to letting other people have a cut at the airship business. And if so it may find that it has not made such a good bet as it thought it had.

As a last example of the usefulness of big airships in Air Transport, here is a story. One day in 1937 (or 38) into my office in Piccadilly walked Elliott White Springs, ex-R.F.C. and U.S.A. Air Service pilot of 1916-18, and author of "War Birds," the best of all war books, of "Leave Me with a Smile," the bitterest debunkment of post-war promises, and of "The Rise and Fall of Carol Banks," the funniest-ever story of an alcoholic tour. Said I: "What in Heaven brought *you* here?" Said he: "The *Hindenburg*." Said I: "Why on earth?" Said he, in a matter-of-fact way: "Because Fräulein is due a month's holiday."

Then he explained. His wife had a German governess for their two children in the Deep South. If Fräulein took her month's holiday in Germany, as per agreement, she would need two weeks to get to New York, and thence to Germany, and two weeks to get back—net result, two months for mother with the children on her hands. So the Springs family—Poppa, Momma, girl, boy and Fräulein—all came to Europe in the *Hindenburg*. Fräulein goes home for a month and the Springs family tour Europe, including England and Scotland, for a month by car. And at the end of it all go back per Zeppelin.

Mother has only been the one month without Fräulein's help. And a good time has been had by all.

That, I submit, is first-class propagandist work for Big Airships. And if you want to know any more about airships—on which there is a mass of fascinating literature—I recommend particularly "What About the Airship?" by Commander (as he then was) Rosendahl, and "Zeppelin," by Ernst Lehmann. A curious fact is that nobody has even written badly about airships. Even Mr. "Spanner," in his violent attacks on airships, wrote well. On the other hand, most of the stuff that has been written about aeroplanes in the past 35 years has been tosh and bilge, especially that from official sources.

PART 3.—THE INTERNATIONAL AIR TRANSPORT WAR

CHAPTER I.—WHAT IS A NATION?

As soon as we come to consider the International War in Air Transport, which was already going strong, although only beginning, before the war with Germany and Japan had ended, we butt head-on into that curious document the Atlantic Charter, which caused so much excitement in the newspapers and so much confusion in the mind of the common man in 1941. Some of the newspapers called it the Magna Charta of the Nations, or some such grandiloquent title, but as our own private Magna Charta was abolished by Parliamentary Decree somewhere about 1940 and replaced by Regulation 18B, we need not bother about whether the Atlantic Charter was ever signed or not. And anyhow, whose signature binds anybody in these days, when treaties are not even scrap-pieces of paper?

Here I may interpolate the remark that I have no more faith and put no more trust in San Francisco, Ottawa, Chicago, Dumbarton Oaks, Bretton Woods, or any of the other geographical conferences, pacts, charters and so forth, than I did in the Treaty of Versailles, Trianon, the League of Nations, Locarno, Kellogg, the Vienna Congress, the Yalta Pow-Wow, Treaty of Tilsit, or anything else of which I have learned in some 60 years' study of history.

I have not the Atlantic Charter by me, but in my recollection, if boiled down to the fewest words, it said that after this war, when freedom from Nazism, Fascism and Japanism has been won, every country will be free to do as it likes. It can choose its own form of Government—Kingdom, Republic, Autocracy, Oligarchy, Plutocracy, Democracy, or, if freedom in that connection means anything at all, I take it either Dictatorship or Communism. There would be nothing to prevent a nation from electing a Führer or a Duce or a Caudillo. And, with that, the natural corollary would be freedom to do what it likes with its own air and with its own airfields and its own Air Force and its own Air Transport.

If my memory is right, the Atlantic Charter is a document of the kind about which we have heard so much lately, called

a bi-lateral agreement. It was, I believe, issued by Messrs. Roosevelt and Churchill, without consulting Marshal Stalin, head of the Military Aristocracy which governs Russia, or Marshal Chiang Kai Shek, who governs most of China, except the North-West. So possibly its validity to-day, whether it has ever been signed or not, is of no great importance.

But what is very important is the precise meaning of the word "country." I suppose we are to understand that there is no essential difference between the meaning of the word "country" and of the word "nation." And that the word "international" means "between countries." That is the most important factor of all this controversy about national and international air rights.

If we could only have a clear definition of what constitutes a country we should know a lot better how to arrange the Air Transport of the world for the future. So let us face the first question—What is a Nation?

We English have been trying to treat Ireland as one country for some 700 years. And ever since, in the days of Queen Elizabeth and Merrie England, we tried to force the Eirish to learn English and stop speaking Erse, the Eirish have been trying to make themselves a nation. Those were the days when Irish names were made illegal inside the "English Pale," and one family, the "Sons of the Islands," the MacInishes, or McInneses, or Maginnises, Frenchified their name into Guinnesse, and later taught the mere English to say "My Goodness, my Guinness," much to their and our profit; and when Mr. Mullins, the loyal Mayor of Cork, reverted to the original Norman, de Moleyns, and acquired the Irish peerage of Ventry.

In my childhood, when the people were content to call themselves Irish without sticking an "E" in front of it, one of their great patriotic songs was "Ireland, a Nation Once Again"—happily ignoring the fact that Ireland never has been a nation, and whenever any chieftain did come near being King of Ireland he was, to quote the fate of Shane O'Neill in Mr. Green's *Short History of the English People*, "Hewn to pieces in a drunken brawl." But to-day Eire, as it calls itself, under its Dictator Mr. De Valera, has at any rate made a nation of the Southern part of the island, to such an extent that we have let it be neutral all through this war.

There were perfectly good political reasons for doing so, but there is no room here to discuss them. That has been one of the most astute of our political moves, although it cost us the use of the Eirish harbours of Cork and Bantry and Lough Swilly, from which our flying-boats might have operated and have saved many hundreds of lives of our gallant Merchant Navy and much good war material for which we paid cash and carried ourselves.

In this connection there is a story which deserves to be told because it does bear so directly on this question of nationality. Some men of the first contingent of the U.S. Army which landed in North Ireland, finding after a few weeks that the Black Northerner is quite civilised and very like the harder and narrower type of New Englander, thought that they would like to take a look at the savages in the South, so they got into civilian clothes and a train to Dublin. And in a pub there they got talking to some of the natives.

One of the U.S.A. troops said to the natives : " Say ! Why can't youse guys give these harbours, Cork, and Bantry, and Lough Swilly, to us for *our* flying-boats, even if you won't give them to the English?" An Eirishman peered at him and said : " Is it give harbours to the likes of youse? Sure, what did ye do with Pearl Harbour?"

And yet when the little token Flying Corps of the Eirish Army gives a party it always sends invitations to the R.A.F. folk up North, and some of them get into plain clothes and come down to Dublin, where they have a royal time in, I hear, just the good old way we used to have in 1900 or so.

There is another story of Eirish neutrality which will do with re-telling. Very early in the war one of the R.A.F. Coastal Command flying-boats had engine trouble and came down off Wicklow, or Arklow, and taxied into the little harbour for shelter. While the mechanics were putting things right the skipper and another officer rowed ashore to be civil to the harbour master.

When the crew were ready they signalled to the shore and the officers took leave of the harbour master, who, raising his glass, said : " Here's better luck to ye'r next landin'." And away they went.

An hour or two later there came down from Dublin an infuriated official wanting to know why the flying-boat crew

had not been arrested and interned. Said the harbour master : "Sure, what would I be arresting them for? How the Devil would I know who we were neutral against?"

And there is another of an R.A.F. pilot who perched somewhere down by the Curragh of Kildare, lost, and without petrol. A Civil Guard (formerly Royal Irish Constabulary) turned up and, learning the trouble, went off on his bicycle and soon returned with a motor van and some petrol. The R.A.F. lad filled up, got his right bearings for Belfast, and settled up generously.

As he was bidding good-bye the Civil Guard, jerking his thumb at the van-driver, remarked: "And ye know, I'll have to prosecute that one for using the petrol in his van improperly by coming off his regular route." Not a word, you note, about the cans of good juice that had gone into the aeroplane, and been paid for in the ordinary way of the black market.

There is a story which shows well this side of the Eirish character. A mixed crew in a big bomber were going to Berlin. The pilot was a North of Ireland Scot, and the bomber was an Eirishman, and, as usual in bomber crews, they were the best of friends and, equally as usual, they were keen politicians. All the way to the target they were arguing on the intercom. about Irish Nationalism and Neutrality and such. As they were running in on the target the pilot, as a last shot, shouted down to the bomber: "And what has ye'r old Devalera done for you?" Back came the voice of the bomber from below: "Well, anyway, he kept us out of this bloody war."

Now, I ask you, what can you do with people whose minds work like that?

Truly the Eirish are incomprehensible to any Englishman who has not been brought up among them. After more than 60 years of them I still find them foreigners, but I do claim to understand them better than they do themselves.

I give our non-belligerent fellow-subjects full credit for the fact that a higher proportion of their young men have enlisted in the British Services during this war than have been raised by conscription in certain parts of this country and in Canada. And they have given us far more than a fair proportion of first-class pilots. That is true Hibernian, or Iberian, cussedness.

In the meantime the Scots in North Ireland, who were Scots when what is now called Scotland was merely Caledonia, and inhabited by Picts, and are politically part of Great Britain, have been intensely loyal to this country. But they would die sooner than become a United Nation with Eireland.

Then you have another example in that patchwork country called Jugoslavia, officially the country of the Serbs, Croats and Slovenes. The Croats hate the Serbs and claim that they are Goths who were driven out of Italy somewhere about the year 400 A.D. The Serbs are definitely Serbs, the Slovenes are some kind of Slay and they all hate one another.

To complicate the situation still more, after the last war a Serb frontier was drawn by the Treaty of the Trianon which left a lot of Hungarians in Serbia and a lot of Serbs in Hungary. One would have thought that the balance could have been arranged quite easily by pulling the Serbs out of Hungary and sitting them down on the land vacated by the Hungarians who would have been sent back to Hungary to occupy the land which the Serbs had left. I suggested this simple solution to a friend who had lived for many years in Beograd (commonly called Belgrade). He looked at me with a pained expression and said: "But my dear chap, you can't do that. There wouldn't be any minorities to massacre." And, grim as his humour may seem, there is a lot of truth in it.

I can only remember one instance in which people of one intruding breed have been taken bodily and pitched out of a country back into their own country. That was when, having massacred most of the Greeks in Smyrna after the Greek Army had in a moment of conceit invaded Asia Minor and been pushed back into the sea, and having destroyed a few coast towns and villages as effectually as if he had been liberating them, Mustapha Kemal (later Kemal Ataturk), the Turkish Dictator, by agreement with the Greek Government through British mediation, took all the remaining Greeks and shipped them back to Greece, where they became an urgent minority question of quite a new sort, which involved the provision of land and work, in what is naturally a poor country, for a large minority of people of the same breed but who had quite a different upbringing and almost a different language.

After the Russo-German, or Stalin-Hitler agreement of 1939 or thereabouts, Hitler pulled all the Germans he could

find out of the Baltic States, Estonia, Latvia and Lithuania, parked them in Western Poland, and left the Baltic States to be Sovietised. I have often wondered what happened when the German Armies went in, and nearly got to Petersburg. Petrograd, or Leningrad (however you like to call it).

There you have evidence that, when Europe has been straightened out or flattened out, which will take a good many years after the fighting in this war has stopped, we shall create new minority problems. For example, in November, 1944, Mr. Churchill informed the House of Commons that His Majesty's Government would view favourably a request by the Government of Queen Wilhelmina of Holland for the possession of German territory as compensation for Dutch territory which had been flooded or destroyed by the Germans. I do not remember that he made any reference to the property which had been flooded or destroyed in the process of liberation by the United Nations in France, Belgium or Holland.

Now obviously if a large chunk of country which has been German for many centuries, to the extent that it is inhabited by West Germans, although, as I have mentioned elsewhere, those West Germans from 1714 up to 1837 were the subjects of the King of England, who was also Elector Palatine of the Rhine and later King of Hanover, there is going to be quite a considerable German minority in Holland, unless we are going to kick all the people out and re-populate the country with Dutchmen.

I leave out the question whether we should be giving away somebody else's property or whether we shall give away part of the King of England's Kingdom of Hanover. And if the people are not kicked over the new German frontier I do not suppose there will be much trouble, because the Netherlands in the extreme east frontier areas of Holland are practically indistinguishable from the Germans of the extreme west frontier areas of Hanoverian Germany. But if they are not to be kicked out, and are only to be handed over to become Dutch subjects and taxpayers, where do the rights of those people come in under the Atlantic Charter to choose their own Government?

Similarly in Eastern Europe Russia proposes to take over large areas of Poland for which the Poles fought in 1920 and won, chiefly because of the excellent staff-work of the French

General Weygand. And Czecho-Slovakia, whether patchwork or homogenous, has agreed to lop off the whole of Ruthenia from the Czecho-Slovak Republic and give it to the Soviet Republic of the Ukraine, because the people are supposed to be Ukrainians—as are an odd million or two of the Eastern Poles, so what is to be done about those folk also.

There is the precedent in that particular difficulty that in the partition of Poland in 1812 or 15 or 16 or thereabouts, all that Eastern part of Poland was handed over to Russia and for 100 years, including the capital city of Warsaw, was Russian territory. People are apt to forget that in 1914 Warsaw was a Russian city.

Then in Western Poland Russia proposes to give large chunks of Germany to the Poles to compensate them for the territory which is being taken away from 1920 Poland by Russia. By the way, you may have noticed in the newspapers in these days that there is much more of a tendency to return to the old word Russia of the Czarist days and less to use the word Soviet, which after all only means a committee.

Here again I do not suppose that the tillers of the soil will care a lot. There is not much difference between an Eastern Silesian and a Western Pole, or a Pomeranian. And such a shift of the frontier would give the Poles the coveted Silesian coalfields. And in any case whatever anybody gives the Poles, like the Irish, they will always be “agin the Government,” national or international. So here we may consider the Poles, because the history of European Air Lines shows that the Polski Air Lines did much more than might have been expected of them between wars.

Shortly after the last war I asked Count Michaelovski, who had been a pilot in the Austrian Army Air Force and was then the Polish Republic's Army and Air Attaché in London, to explain the difference between the outlook of the German Poles and the Russian Poles and the Austrian Poles. He put it very neatly.

He said that the German Poles hated their German masters but respected them as people who held them down by superior education and intellect. The Russian Poles hated the Russians and despised them as people of inferior education and intelligence, who held them down by weight of numbers. So I asked him what about the Austrian Poles? He said that

the Austrian Poles never bothered about the Austrians. They had their own Parliament and their own schools and their own language, the Government in Vienna never worried them about anything, they ran themselves, and they were quite happy; consequently, he said, when the war came the Austrian Poles joined the Austrian Army willingly and fought gallantly. Certainly nobody who has seen the Poles in this war will doubt the gallantry of their fighting. And if I remember rightly, in 1914-18 the German Poles used to desert to the Russians and the Russian Poles to the Germans because both disliked their overlords.

Then this Atlantic Charter question and the freedom of each country to choose its own transport policy is complicated by a lot of minor considerations about people who come very nearly inside Kipling's phrase: "The lesser breeds without the law!"—I am never quite certain whether Kipling meant "outside the law" or "who have not had The Law." But because we have got to discuss this question of Air Transport realistically without hypocrisy and humbug, we must face the fact that there are minor nations which if they were left to their own devices would be chewed up by surrounding enemies if not within five minutes, within five years.

Nobody is going to pretend, if he wants to be honest, that Persia is capable of running its own affairs. It only exists by reason of a friendly agreement between ourselves and the Russians. After the last war, when that Cossack adventurer Riza Pahlevi made himself Shah, he put up some show of making Persia a nation by the simple process of oppressing the people to the verge of starvation—and past it in places—and building a poor imitation of a European city at Teheran. If you want to know more on that subject I recommend you to read *By Order of the Shah*, by Air Commodore W. L. Howard-Williams, M.C., R.A.F. (rtd.). It is such a complete exposure of Persia that the book was excluded from Persia by order of the Shah.

Then look at Iraq. Can anybody say that Iraq is capable of running air transport or of existing as a country without our backing and the assent of Russia? If we walked out our good friends the Turks would absorb Iraq and return it to the Turkish Empire, from which we took it in 1918. And if the Turks did not, then Ibn Saud and his Wahabi Akhwan would overrun the place in a month. And anybody who knows the

Arabs knows that the Arab League can only be a real power if somebody of Ibn Saud's mental ability is boss. Otherwise it can only have some slight nuisance value because of the political intrigues of slippery-minded Levantines.

Then take a still more important example which, dangerous though the subject may be, ought to be discussed if we are to get a thorough understanding of air transport in the future that is, the great Indian Empire. When you read the history of Air Transport in India in *A History of the World's Air Lines*, you will see how very little Indians of any breed, caste or denomination, did to promote air transport or aviation of any sort. To get our Empire Air Route across India Imperial Airways had to put up a dummy Indiah Air Transport firm with some well-to-do and intelligent natives on the board, which company chartered Imperial's aircraft and Imperial's aircrews to run the Emperor's mails across his Indian Empire.

In spite of all the political jabber of that subversive party which calls itself Congress (semi-educated citizens of the United States imagine it to be an organisation something like their own eminently sensible Congress), if we English got out of India to-morrow, as these Congress agitators pretend they would like us to do, within twelve months they would be in complete chaos. A favourite saying of our sporting enemies and long-range relatives, the Pathans of the North-West Frontier, is that, if the English got out of India, within twelve months there would not be a piece of gold or a virgin left in the Ganges Valley.

On the other hand, many, I do not say all, of the great independent Indian Princes who, although loyal subjects of the King of England, Scotland, Wales and Ireland and Emperor of India, are not governed by us and would never be governed by Congress, would start wars of their own, either of personal hate, or merely to extend their territory over that comparatively small part of the Indian sub-Continent which is actually governed by us.

Considering that there are some 300 languages and just about as many creeds in India, apart from the great cleavage between the Moslems and the Hindus, there is about as much hope of India becoming a nation through anything except military conquest as there is of Ireland becoming a nation. So where does your Atlantic Charter go from there?

For illumination on this subject I commend the reading of "Verdict on India," by Beverley Nichols. It tells most of the basic facts about India which I have heard from my friends in the Indian Army, the Indian Civil Service, the Indian Police, and the British Army and Air Force in India for the past 50 years or more. Our Pink Wet Appeasers have been glossing them over for 40 years or so, which is why the U.S. knows nothing of them, and our own people know little more.

CHAPTER II.—THE EXPANDING COMMUNITY

Here I commend to your attention that valuable book, *Air Power and the Expanding Community*, by Major Oliver Stewart, M.C., who since he became its editor, has made such a success of that well-produced monthly magazine "Aeronautics." The expansion and development of air lines all over the world, as I have discovered in digging out their history, is a good example of his theory of the expanding community.

His basic idea is that the family is the unit of society. A number of families for self-protection got together and formed tribes. Tribes either got together for self-protection or one tribe conquered another and became a bigger tribe, and so collections of tribes became nations. Then one nation started on a career of conquest and beat up a lot of others and became an Empire. My knowledge of history is fairly wide but I cannot recall an instance of several nations combining voluntarily to make a bigger nation.

One might perhaps think that the British nation is an example of one which did. But in fact the little Saxon kingdoms fought one another until one or other came out on top. In the meantime several of the Saxon nations conquered the Welsh and roped them in. Then the Danes conquered the Angles and Saxons—they were all of the same Germanic blood, as Mr. Green points out in his *Short History*. They, in turn, were conquered by the Normans, also a breed of Norsemen, and so England became one nation.

Then the English, under their Norman kings, started a series of wars with the Scots, which although we consistently

beat the Scots in battle, with a few mistakes such as Bannockburn, did not result in the conquest of Scotland. So in the end, for the sake of peace and quiet, we let the Scots come down and govern us. But we still have not conquered Ireland.

One might be deceived by the name of the United States into thinking that the hotch-potch of different Sovereign States—each in its way a separate nation, although speaking practically the same language with slight variations in the features with which it was spoken, had willingly combined to make one nation. But in fact the federalisation of the numerous states of America was only brought about by a Civil War which was up to that time the bloodiest war in history. And even so the diversity, one might say the perversity, of outlook of the people in the different States has been such that as lately as 1924 I met a singularly charming and well-educated woman from Louisiana, about fifty years of age, who told me that she was 19 years old before she knew that Danyankee was two words.

And to-day I gather that the solid, respectable Mayflower New Englander regards with distaste the mongrel population of New York, which looks down on the Central European agriculturalists of the Middle West, who agree with them in thinking of California as populated entirely by alien immigrants who swindle their money out of them in movies, and that all four agree in regarding the white folk of the Southern States as a lot of reactionary lazy good-for-nothing people who live on the proceeds of badly-used share-cropping niggers, on whom they would re-impose slavery if they could, and on whom they do impose "Jim Crow" laws.

So much for the single national spirit. And we ourselves are no better if we take the trouble to discover the innermost feelings of the Scots, English and Welsh and the Irish for one another. Basically each of us is a foreigner to the others.

And so one sees the force of Oliver Stewart's argument about the importance of Air Power to the expanded community. And here remember that Air Power does not mean only keeping a powerful Air Force with which to blow holes in, or blast pieces out of, another community which has become distasteful to the owner of the big Air Force. Remember that, although the Royal Navy did keep the peace of the seas in the days when we could sing "Rule, Britannia," and "We don't want to fight,

but by jingo if we do," without being accused of Jingoism; and when Britannia really did rule the waves; nevertheless the sea power of the British Empire was not made by the Royal Navy, it was protected by it. The power of the British Empire was built by and built on what we used to call the Mercantile Marine, now much better called the Merchant Navy.

In the same way the Air Power of the British Empire, or of the Commonwealth of Nations if you like it better, must be built on our Merchant Air Service. In the days when our Merchant Navy was building up the prosperity of the Empire the populations of Canada and New Zealand and Australia were too small for them to contribute a worth-while amount towards our shipping. India contributed a good deal, but mostly below decks in the form of Lascars and more recently, for some curious reason, Pathan or Afghan firemen. Ask Sir Alliott Roe about them. He had some experience when he was third engineer in a tramp steamer as a very young man, before he took to playing with aeroplanes and founded A. V. Roe & Co. Ltd. But in air transport things have worked out differently.

As the history of Australian Air Transport shows, not only have the Australians developed a highly efficient Merchant Air Service of their own with some little Government help in the form of subsidies for carrying mail, but, thanks to the energy and enterprise of Hudson Fysh and his co-directors of Qantas, they have taken over, in partnership with New Zealand and with us, more than half of our enormous Imperial air route from England to New Zealand. And so far as the management of their section is concerned it is all their own.

But the history in detail shows how the big firms swallowed up the little ones in accord with the Law of the Expanding Community. And at the end of 1944 the Australian Government decreed that all air lines should be nationalised—which is pure National Socialism. And for five years I have imagined that we were fighting National Socialism in Germany.

In much the same way air transport in Canada has been developed by individual Canadian enterprise, just as was the great Canadian Pacific Railway. But Trans-Canada Airways, which has the monopoly of trans-Continental Air Transport, had become by 1944 quite definitely a National Socialist organisation, with Mr. Clarence D. Howe as the Führer or Gauleiter

or Kommissar; though it is still a Canadian affair operated by Canadians. And all those heroic "bush flyers," who fly from "the end of steel," which means rail-head, to places well inside the Arctic Circle and have been organised and more or less standardised into one body under the name of Canadian Pacific Airways are under the financial hand of the Canadian Pacific Railway. There again the courage and the skill and the enterprise is Canadian. There is material for a first-class big book on Canadian Aviation, up to the time when the Government Nationally Socialised it.

So, you see, the air power of this considerably expanded community known as the British Commonwealth of Nations is built very largely on its Merchant Air Service. And all through you see the small air operator being swallowed up, as in this country the Boa and the Railways have swallowed private enterprise.

CHAPTER III.—THE EXPANDING GOOD NEIGHBOUR

Between the end of the war in 1918 and the beginning of the next in 1939 the only community which compared in scope, and overwhelmed by sheer size, the British Commonwealth, was the United States of America. I leave out Russia at this point, as it is all one homogenous land mass.

Nobody grudges the United States their pre-eminence. They have worked for it and they have deserved it. While we fought Germany (leaving out the phoney war) for two years without Allies, nobly supported by the daughter nations of the Commonwealth, who are so deliciously rude to us in time of peace, the U.S. Aircraft Industry was doing very well. We were buying aircraft from the United States, not one of which was war-worthy and all of which had to be modified when they got here to make them usable. And we were paying for them, I think, at quite reasonable prices, with every red cent of British money which was invested in the United States. Whether a man had a few dollars in a U.S. bank or a few shares in a U.S. company, or whether he had a branch factory valued at tens of millions of

dollars, as had Courtaulds, everything was liquidated as effectively as if it had been a kulak in Russia. The owners were paid in English money in England for their liquidated assets and they had precious little prospect of being able to invest it to get back what they had lost.

The money thus acquired in dollars in the U.S.A. was paid out to U.S. armament firms, with the result that the U.S. Aircraft Industry, as it is to-day, was built up on the vastly expanded foundation for which British money paid. That was during the "Cash and Carry" period when we had to pay cash for every blessed thing we bought from the States and had to bring it over here ourselves in our own ships. But later on Mr. Roosevelt, who had always been a good friend to this country, told the world that the United States would give us "every help short of war."

When I, quoting a witty American friend's paraphrase of that sentence, wrote, "Now that the United States has decided to finance the war to the last Englishman, preparations are being made to fly Flying Fortresses to England." I was denounced in certain London newspapers as "The man who insulted America." *The Daily Telegraph* correspondent in Washington called the whole thing a storm in a teacup, and in the States it was taken as a joke, except by the Isolationist and Anti-British (which generally means the Irish-American) papers, who seize at once on any kind of a broken reed with which to chastise England. When I was accused of insulting America I felt something like that imaginary individual who was described as "the sort of man who would speak disrespectfully of the Equator." But a lot of silly people in this country took it seriously, and others saw in the teacup storm a chance to get back on me for several reasons, good and bad.

Now there is no getting away from the fact that the U.S.A. were well ahead of us in air transport before this war began in 1939. They beat us on speed. The Royal Dutch Air Line (K.L.M.), flying Douglas machines to the East Indies, used to go pretty nearly from Holland to the Indies and back while we were wandering along towards India. The Germans, with their much slower Ju. 52s, were stretching out to Persia, and even experimentally to China; and their flying-boats were crossing the North and South Atlantic.

The U.S.A. had the great advantage of being able to fly 3,000 miles from East to West and 3,000 miles from North to South without having any bother with changes of language, changes of coinage, or changes of continent. That, at any rate, gave them a chance of getting going.

But it does not explain everything, because Pan-American Airways were circumnavigating South America where they had to deal with as many different languages and coinages and frontiers and political set-ups as existed in Europe. We have to confess that the U.S.A. got away with it by sheer enterprise. I think that the rise of young Mr. Juan Trippe and his Pan-American Airways, is one of the greatest, as well as quite the funniest, of all the stories of the world's great air lines. Hooan or Huan Trippe (as his friends call him in the Spanish-American way) seems to me to be a descendant of the Spanish Conquistadores.

And who is to blame the U.S.A. if they covet the earth? Canada is largely under the influence of the U.S.A. commercially, financially, culturally, agriculturally, and linguistically, in spite of its National-Socialist Air Line.

The little dictatorships in Central and South America, although some of them are nearly as big in area as the United States themselves, are quite minute when one calculates the politically-minded, partly-literate percentages of the population. They are all coming more and more under the influence of their Good Neighbour, the U.S.A. Mr. Roosevelt's doctrine of Good Neighbourliness is highly to be commended, but we have already had plenty of evidence that those States, commonly called Latin-American because the governing classes are generally remotely Spanish or Italian or Portuguese, although the great masses of their populations are indigenous Indians of Mongolian origin, are regarded by the financial and commercial interests of the United States as an assortment of Naboth's Vineyards, on which U.S. Big Business hopes to get a stranglehold. And I can foresee a time when the Good Neighbour will have swallowed up all the Good Naboths.

Already the Munroe Doctrine of 1823, which was invented originally to choke European Nations off interfering by force of arms with any nation in the Americas, is being applied by words and on paper to interference with the trade of the U.S.A. in any Latin-American nation.

Mind you, I am not in the least blaming the United States. It all fits in with the Doctrine of the Expanding Community. The U.S.A. may not have to conquer the Latin-Americans by force of arms. Judging by the trouble the States had when they tried to impose direct colonial rule on Cuba and the Philippines, that is about the last thing they want. But they do want financial and commercial control, and before this war they were getting on very well towards it.

I know that Big Business in the U.S.A. strongly resented our efforts to get aircraft business in South America in the seven or eight years before the war. In the first year of the war, when we did not realise that things were so urgent and did try to carry on "business as usual," certain friends of mine who were trying to sell light aeroplanes of no military value in South America got themselves heartily disliked and were practically told to shut up shop by our Government people, because the U.S. Government objected that if we could afford to offer aircraft for sale in South America there was obviously no urgent need for us to buy aircraft in the United States. It amounted, in fact, to an ultimatum that if we did not stop trying to sell light aeroplanes, or even designs and building rights, in South America they would not let us buy in the States. And since VE and VJ days this attitude has intensified.

Moreover, well on towards the end of the war, before the Chicago Conference in 1944, our Government people were definitely afraid to announce their post-war Air Transport policy because they were afraid lest the U.S.A. should cut down our Lease-Lend supplies. There again I have no grievance against the United States because self-preservation is the first law of nature and Big Business must preserve itself.

But if one grasps this aspect one perhaps understands more clearly the attitude and the actions of the Argentine Republic, which has for many years been more or less at loggerheads with the U.S.A. The better-class people in the Argentine are predominantly of Spanish descent, with a considerable English and Irish admixture, and there is a large Italian population among the middle and lower classes, who largely keep to themselves. The lowest class are assorted indigenous people of remotely Mongolian descent, wrongly called Indians. Among the lot the Argentine has produced a stronger type physically

and mentally, of each of its own races, than have the other so-called Latin-American breeds.

This is also true of Chile, where the ruling caste are strongly Spanish, with a little English and Irish admixture. In their far south they have an indigenous native tribe, almost a nation, which they have never been able to conquer, besides a solid German settlement which dates away back into the past century. With these independent-minded people the Chileans are getting better in touch through Air Transport, which they are carrying right down to the Straits of Magellan. And they likewise are not keen on being swallowed by the Good Neighbour. That is quite simply because those countries are nearer to the South Pole than are those to the North of them, who are nearer the Equator. In the same way the more Northern people of Europe, Asia and North America are stronger mentally and harder in body than are the Southerners, until in each case one gets so near the pole that the perpetual cold again deteriorates the human animal.

Furthermore, there are enormous English interests in Argentina. We have financed practically all their railways. We import millions of pounds' worth of frozen or chilled or canned beef, and other Argentine products. So their sympathies are inclined to be pro-English. On the other hand, the United States have for many years refused to import Argentine cattle or to eat Argentine-killed or even canned beef, on the specious plea that U.S. cattle have never had foot-and-mouth disease, whereas that trouble is endemic in the Argentine. The Argentine, on the other hand, say that this prohibition is merely a plot among the cattle interests in the States to keep out Argentine trade. And that does not make for good feeling either. The Argentines themselves say that they have never had true foot-and-mouth disease and that their cattle always recover from whatever is the disease from which they do suffer.

In any case, the Argentinos do not like playing the part of the Good Naboth to the Good Neighbour. And that may have quite far-reaching effects on the Air Transport of the expanding community of the two Americas. Irrelevant to that subject though it may seem, this and many other equally irrelevant points all have a direct bearing on the international war in Civil Air Transport.

Another factor to remember is that the U.S.A. has done little to help or encourage Air Transport in Argentina. All the early development was done by small German enterprises. Then that wonderful undertaking, the Aéropostale, one of the most romantic stories in the history of air-lines, came from France, down the Atlantic Coast from Port Natal, and over the Andes to Chile, long before the Grace Brothers brought Panagra over the Andes from Chile, and Mt. Juan Trippe brought Pan-American Airways (Pan-Am) from Florida by Cuba, Trinidad and Brazil to Argentina.

CHAPTER IV—APPEASEMENT

One of the worst troubles on our side of this Civil Air War is that there is too much appeasement about. Nobody until quite lately has, to use the best expression, had the guts to get up and say what we think. Naturally, as soon as one uses the word appeasement everybody thinks of poor Mr. Neville Chamberlain. Some people think of him as an innocent, feeble-minded person who was taken in by Hitler and the Goebbels-Ribbentrop Gang. Others believe that he was an astute politician who took *them* in by pretending that he was taken in by them, so that he could gain time for our re-armament.

In fact, he was so honest that when he arrived by air at Heston from his interview with Hitler and announced "Peace in our time," he sincerely believed he had got it. So did his equally simple-minded Cabinet—see their beaming faces in the photograph of his arrival. So did hundreds of M.P.s, if not so honest individually as he was, judging by the hysterical acclaim with which he was received when he presented his scrap of paper to the House of Commons. And they must have known that no nation in history has ever kept a treaty a day after it has ceased to pay.

I think that I can claim to know more than most people about Mr. Chamberlain and Appeasement, and it has a very direct bearing on our present international air manœuvring. In 1905 I was living in Birmingham, a charming and cultured city in those days, in spite of its dirt. It was the only city

in England out of which one could go from the commercial centre to the country without driving through miles of slums, it had a better supply of good music than any other city, and it had the Edgbaston Debating Society, which had already been the practice-ground of many prosperous lawyers and some prominent politicians. The great Joseph Chamberlain, Neville's father, had been President or Chairman, and when I was a member Neville held the position and often took the chair.

Speechmaking was not in my line. I liked listening to the orators, and learning the political tricks. But sometimes I heckled a bit. And when anybody heckled in that decorous assembly poor Neville Chamberlain would look with a pained expression in the direction of the heckler, pat the air two or three times towards him, and remark, "Tut-tut, Tut-tut." He ought to have pointed a firm finger at him and have said tersely, "Shut up."

Whenever he patted the air that way he made me think regretfully of a scene in a music hall in Cork many years before. A very low Irish low comedian named Pat Kinsella. (pronounced Kinsh'la, please) was being heckled from the front of the stalls by a young sprig of the Cork gentry who had absorbed the party spirit too freely. Pat stood him for a bit, interfering with his best gags, then he walked right up to the footlights, pointed over them at the offender and said, "Eh! Be quiet, you. I'll feed you in a minute."

The heckling still went on, and was spoiling Pat's act. So at last he stood square to the front of the house, spread his arms appealingly, and said, "For the love o' the Lord will somebody put a wad o' hay in that calf's mouth?" After which the young gentleman's friends bundled him out, while the house roared.

But to see Pat at his least appeaseful, one had to see him on the stage of his own minute music-hall in a back-alley off Grafton Street, Dublin, with a porter-bottle in each hand, defying the audience, largely composed of youngsters from Trinity College, Dublin, to come onto the stage and throw him off. I never heard of a successful attempt to do so.

Now that, I suggest, is one good way of dealing with a heckler. And anyway, one gets nothing by appeasement. Any human being will take an ell if you give him an inch; and, to

quote the historical Cockney, "Most of them will take an 'ell of a lot." One gets far more by standing up for oneself and telling the other fellow where he gets off. If one owes him money one is in a still stronger position because the other fellow knows that if he goes too far he will never get his money back, or interest on it, or, alternatively, he will lose trade and will not have a chance of making a profit out of one.

We English (or British if you like) have been singing small and belittling ourselves for too long. We always seem to be like the impoverished gentlewoman who was reduced to selling her apples in the market place. There she sat in an obscure corner, saying, "Apples! Apples!" in a low voice, and adding to herself, "Dear me, I do hope nobody will hear me."

All through this war our aircraft have been much better than those of any other nation. So why do we not proclaim the fact long and loud as good reasons for saying that our Air Transport craft are going to be equally far ahead of those of any competitor?

Every U.S. aircraft that has come here has been altered or modified to make it warworthy. That estimable firm, the Lockheed Company, has kept up two vast establishments in England and one in Scotland, whose job has been to modify U.S. aircraft of several makes so that they would be fit for war. Just around the end of 1944 they celebrated the passing out of the 20,000th modified machine. And on top of that, the U.S. Army Air Forces have had two enormous Service Depots of their own, doing the same sort of work and employing thousands of able-bodied young men. One of those Depots used to be run for the U.S. Army by a British aircraft firm, who employed girls to do the same thing. When I went into that great machine-shop I could not at first make out why it looked queer, and then I spotted that there were men machine-minders where I was accustomed to seeing women. Which gives one an idea of the vast man-power of the U.S.A., but also gives one a sound reason for being proud of our own war effort. Considering that the U.S.A. had not conscribed any men over 40, or any married men, one sees what their war-potential must be.

I have been rather led into this glorification of the "mere" English by sundry contemporary writers, and I am particularly pleased to find support from the Political Left, because they are the folk who, more than anybody, have in the past played

down everything English. They were the people who, when I was agitating in *The Aeroplane* between wars for an Air Force so big that nobody would dare to look crooked at us, denounced me in Parliament as a warmonger; and they are people who, when war came, screamed for a Second Front, in spite of the fact that through their Peacemongering we had not enough troops or munitions for a First Front. Anyhow, here is one supporter :—

He is Mr. A. L. Rowse, the son of a Cornish miner, educated at the local elementary and secondary school, whence he went to Oxford and won a Fellowship at All Souls. He has made a name as a writer and reviewer and has twice stood as a Socialist candidate for Parliament in his home constituency, Penryn and Falmouth.—Thank you for the information, "Peterborough." In 1944, Constables published a beautifully printed book of Essays of his called, "The English Spirit"; mostly reviews of books on English worthies and unworthies from Elizabeth to George IV, and illuminated, I fancy, by Mr. J. R. Green's "Short History of the English People." He starts with an epithalamium, rather than a eulogy, of Mr. Winston Churchill, of a sort not to be expected from the Left Wing, and ends with an essay on a book called "God's Englishman," by a citizen of God's Own Country—as the U.S.A. modestly used to call themselves—in which the writer, Leland Dewitt Baldwin, attempts to portray what he calls "The Anglo-Saxon Spirit," as he sees it in our history.

Mr. Rowse remarks that "a book on England by a Mr. Baldwin does not at first sight inspire confidence"—an allusion to our late lamentable Prime Minister, whom Mr. Rowse dislikes as much as he does poor Neville Chamberlain, to whom he refers, inaccurately, indelicately and rather snobbishly, as "a Midland ironmonger." But he is reassured on finding that this Mr. Baldwin is an American.

Incidentally, I wish that Mr. Rowse, or some other bright young brain, would discover or invent a word to distinguish citizens of the U.S.A. from other Americans. Many of the lowest forms of human life are Americans—for example, a Baffin Land Esquimaux, a British Columbian Siwash, an Ottawa politician, a Montreal *habitant*, a Mexican *peon*, a naked Amazonian savage, a wild man of the Bolivian Andes, or a Patagonian giant, is an American as much as is any of

my good and much admired friends in the U.S.A. Somehow, "Usanian" looks and sounds silly, although the U.S. Services use the strangest contractions for their officers of the highest ranks, such as Cominch for Commander-in-Chief, or Shaef for Supreme Headquarters Allied Expeditionary Force.

Anyhow, Mr. Baldwin, U.S.A., says, "The Englishman's patriotism allows him to admire no-one else. The Anglo-Saxon, being what he is, does not need to learn." To which Mr. Rowse replies, "The truth is that all through our history we have been subject to foreign influence . . . and have been ready both to admire and to learn." How true; there are even people here who have admired U.S. aeroplanes, while I have been lamenting that all those fine, clean-bred, decent-living young Anglo-Saxons from the U.S.A. have been sacrificing their lives over Germany in aircraft which were definitely not warworthy.

Mr. Rowse goes on, "Throughout the Middle Ages we learnt from the French; at the Renaissance from Greece and Rome and from Italy; in the 17th and 18th centuries from the French *grand siècle*, and a great deal from Holland; in the modern period we have learnt something from German science and American mechanical technique. The time has come when other people—to judge from the state of the world around us—might learn something from us.

"And why should one not say so? I simply do not understand why this country, which has made by far the most creative contribution to the modern world, should be expected to be apologetic about it. Many Englishmen are—especially if they are intellectuals." Now that from a Left Wing Intellectual is pretty stout. Mr. Rowse may be Left and Pink, but at any rate he is not Wet.

Farther, Mr. Rowse says, "When Mr. Baldwin begins by saying that the Englishman's way of life is the very best of all possible ways, one is tempted to ask, 'Well, isn't it?' Looking round the contemporary world one doesn't see any that is noticeably better in being. I hasten to add that I write not as an Englishman, but a Cornishman. I am merely anxious that the English should have justice done to them."

Well now, that is handsome coming not only from the political Left but from the left-hand bottom corner of the map. I wonder where Mr. Rowse's ambitions or patriotism trend

under the Atlantic Charter? Most of us ignorant Anglo-Saxons know nothing of that quarter beyond that 30,000 Cornishmen wanted to know the reason why a gentleman named Trelawney should die. My only quarrel with Mr. Rowse is that, as a Cornishman, he criticises another U.S. author who wrote on England for thinking more highly of the tough North than of the soft South. As one of a family which has sat on the south side of the Tweed, except when invading Scotland, ever since 1104 A.D., I know that the U.S. writer was right.

My last quotation is that, "From this point of view Mr. Baldwin's book is of immense value. He is, in fact, deeply sympathetic to the spirit of this country, now that he has discovered what it really is. But if such misconceptions are possible to the friendliest and best-informed Americans, what must the others think of us? It is an alarming thought. Talk about the re-education of Germany. It looks as if the most important desideratum for international understanding after the war is the re-education of American opinion about this country. And the first thing is not to be afraid to stand up for ourselves. In fact, it is the only basis of mutual respect."

Hear! Hear!! And very well put. All this appeasement, from the highest political circles downwards, has done a vast amount of harm. The normal ignorant U.S. citizen does not understand it. In the trial of that U.S. soldier who shot old Sir Eric Teichman, the U.S. Army Officer defending the prisoner, and pleading insanity, said that in the war 1917-18 the average mental age of U.S. troops was that of a normal child of 12 years of age, but that in this war the Army was taking men in of a mentality as low as eight years of age. How can such folk be expected to understand anything.

But that is the reward which the originally Anglo-Saxon United States got for admitting for about 50 years a horde of the dregs of Central and Eastern Europe—Bohunks, as they called them—for Bohemians and Hungarians—and all sorts. Glenn Martin, the famous maker of flying-boats, told me, before he moved to Baltimore, that there were more papers published in Lettish in the City of Cleveland than ever there were in Latvia.

To get along with the above-normal intelligent U.S. citizen, who is the chap who does things and gets things done, one has to treat him like a man and brother, not with unnatural politeness as if he were a shopkeeper who keeps the things one wants under the counter, nor yet as a financial superior from whom one wants to borrow—as the British nation has had to do. And one need not be afraid of quarrelling with him, as one does with a brother. Metaphorically—and often physically—the best way is to slap him on the back in a cheery way, but hard enough to let him know that you would hurt like blazes if you hit him to hurt, then take him by the arm and say, “Come and have a drink, Sam.” The U.S. citizen understands that approach.

So does the Western German, of whom the population of the U.S.A. (the more intelligent and hardworking portion of it) is so largely composed—as witness so many of their best soldiers and sailors, from Eisenhower and Nimitz and Stark and Wedemeyer downwards.

Anyhow, let us drop appeasement and keep our own end up. We have nothing of which to be ashamed, except our muddle-headed or dishonest politicians, and our inferior tanks—and there the U.S.A. have been as bad as we have been, except when they have been worse.

Some of our critics, who are emerging from their journalistic dug-outs and are daring to criticise the U.S.A., find the U.S. Isolationists an easy and safe mark. I have every sympathy with the Isolationists, and find their point of view perfectly logical. I admit that it is selfish and insular. But we, also, are always accused of insularity. The U.S. citizen is bound to be more insular than we are, he lives on a much bigger island.

In Great Britain one cannot get more than 100 miles away from the sea. Coventry used to boast that it was the centre of England for that reason, and the indigenes used to be so annoyed when I told them that I believed it because, like the centre of a wheel, they stood still while the rest revolved. In the U.S.A. you can get 1,500 miles away from the sea. Which causes that particularly insular outlook—or inlook might be a better word—which is typical of the Middle West.

And that 1,500 miles from the sea, 3,000 miles from ocean to ocean, has given the U.S.A. the chance of developing Air

Transport along certain lines in a way that no other country has done. But those lines were insular and isolated in method—which was the basis and partial justification for those rude remarks by Big-General Critchley, the Governing Director of the British Overseas Airways Corporation to the Royal Aeronautical Society, when he said that we could teach the U.S.A. a lot about Air Transport, especially about service without servility.

So we can. But in the past three years the U.S. Army Air Forces Transport Command has learned a lot about Air Transport overseas, which was before known only to Juan Trippe and his Panagra and Pan-American Airways. And because U.S. Transport Command is staffed all the way from top to bottom with officials of U.S. air lines which have hitherto not been allowed to operate outside the United States, I can see a lot of fun coming in the efforts of the rivals to obstruct one another.

In the earliest days of Pan-American Airways, when young Mr. Trippe, then about 30 years of age, was trying to get through to Buenos Aires from Florida, a rival concern, called New York, Rio and Buenos Aires Airways, shortened to NYRBA and commonly known as Near Beer, got well away down the East Coast of South America before he did. How he beat them in the end, after real hand-to-hand fights in jungle aerodromes along the line, is one of the funniest stories in the history of the world's air lines.

I expect something very like it over again when the air crews and ground crews of the U.S.A. Transport Command are let loose, and are snapped up by Juan Trippe's rivals. There will be no appeasement then. And when to that are added all our own R.A.F. Transport Command people looking for jobs with British air lines, and taking jobs with any foreign country which will pay them when they fail to get a British job, the fight looks like being one in which, as the Irishman said, anyone can join in.

That is why I am all against appeasement, and in favour of establishing our British air lines, and the more the merrier.

There is a story about young Mr. Trippe which is worth telling because it gives an idea of what his rivals and our British Airways are up against.—A U.S. Big Business man who did not know Trippe wanted to do deal with him and fixed

up an appointment. He expected to meet a hawk-like or shark-like business executive typical of his kind. To his surprise he was shown into a luxuriously tasteful office and was greeted by a charming young man, handsome in a Spanish way and with delightful manners. Big Business put his propositions which Juan Trippe received most courteously, and put most reasonable suggestions in return. They parted the best of friends. "And," said the Big Business man, telling a friend of the interview, "believe me, I had walked a couple of city blocks before I felt a pain in my neck and found that I had a knife sticking in it."

That story was told to me by H. A. Jones, of the Air Ministry, only a few days before he was killed on the way to Bermuda, along with Sir Peter Drummond and Commander Brabner, M.P., and others. Jones and I agreed in liking and admiring Juan Trippe and in hating the idea of getting up against him—as this story may show. A variant of that story is that when Big Business was extolling Juan to his friends one of them remarked: "What are you going about without your pants for?"

CHAPTER V.—THE CHICAGO CONFERENCE

The War in Civil Air Transport began officially with the International Air Conference at Chicago in December, 1944. By way of what the horse-trainers call "a pipe-opener," to get the lungs and tongues of our British Empire delegates working, we had a conference of our own at Ottawa. What happened there was not made known publicly before the International Conference began in Chicago, and probably it matters little anyway. At any rate we, as an Empire, seem to have been as unprepared for the Conference or verbal war with the United States as we were for war with Germany in 1939.

Those who were at Chicago have told me that the United States Delegation, under their Assistant-Secretary of State, Mr. Adolf Augustus Berle, had their whole plan cut and dried. Mr. Don Iddon, of *The Daily Mail*, who knows his U.S.A., and particularly his Washington political underground, better than any but perhaps half a dozen political writers (he is far more

than a mere gossip writer, though he poses as such) wrote on November 29, 1944, that Berle (pronounced Burly) "has been a boy wonder ever since he entered Harvard at the unprecedented age of 14; but now at 47 he is an ageing infant prodigy. . . . A brilliant, even ruthless lawyer, he has been a member of the New Deal Brains Trust since the early days. . . We shall have to be up early to outsmart Berle."

Readers will remember that Mr. Berle was over here some months before that, conferring with Lord Beaverbrook, who at that time was officially in charge of the job of planning for the future of our Civil Air Transport after the war. And I gather that his versatile and agile Lordship got very little change out of Mr. Berle. In any case, whatever he got out of him about the U.S. plans for the Conference were either not transmitted to or were not understood by the British Delegates at Chicago.

At the Conference the head of the Delegates for Great Britain was Lord Swinton, the newly-appointed Minister for Civil Aviation. If he had been a genius he could not have had time to study the subject of Air Transport deeply enough to have got a thorough grip of it. He is a hard worker and an obstinate fighter, but work and obstinacy are not enough to come out level with Mr. Adolf Augustus Berle. The rest of our delegation consisted of Sir Arthur Street, Permanent Under-Secretary at the Air Ministry, but not a Civil Aviation official; Sir George London, whose connection with Civil Aviation is not familiar to those who have to make a living out of Air Transport; and Messrs. G. G. Fitzmaurice, W. C. G. Cribbett, J. H. Magowan, and C. A. J. Walsh. All, so far as I know, competent and well-meaning Civil Servants.

A curious fact is that nobody was appointed to our delegation from among those who had handled our corner of International Air Conferences in the twenty years between 1920, when the freedom of Air Transport began, and 1939, when it stopped. Anybody who knew anything of the subject would have expected that some of the British representatives of the Comité International Technique et Juridique Aérien (the Citeja) or of the International Air Traffic Association (the Iata), otherwise the Comité International de Navigation Aérienne (the Cina) would have had a hand in it.

The Canadians, as I have already said, had gone National Socialist, under the dominating personality of Mr. C. D. Howe. And the Australian representatives, Messrs. Drakeford and McVey, whose Government was already committed to nationalising Air Transport, went a step farther. They, supported by Mr. D. G. Sullivan, for New Zealand, argued in favour of internationalising all Air Transport, and held that the great trunk lines of the air of the future should be operated by an International Air Authority which should also own the aircraft employed.

This International or Supernational Socialism seems to have been too much for the Canadians to swallow—and remember that a very high percentage and possibly a majority of the Canadian people who are interested in Aviation are bitterly opposed to National Socialism in the air, and therefore still more opposed to International Socialism. In fact there seems to be much the same difference between National and International Socialism as there is between Russia's National Communism, with its Red Army Officer Aristocracy, its Party Middle Class, and its 160 million mere Proletarians, and its 18,000 State slaves in concentration camps (Russian official figures); and the International Trotskyite Communism of Europe, on which Mr. Churchill was so emphatic and amusing in the House of Commons.

After a great deal of talk the British Empire delegation went on to the International Conference at Chicago. There they got a real setback, for they found that the United States were at any rate united in one belief on Air Transport, namely, that the development of Air Transport ought to be left to individual enterprise.

As I have often said, the United States is populated by people whose fathers or forefathers had the energy and initiative to pull themselves up by the roots, take a chance, and go overseas to make their fortunes. Consequently they are ready to try anything once. But evidently the idea of trying Internationally Socialised Airways even once was outweighed by their individual energy, initiative and enterprise. They want to go on developing their airways themselves.

And there, although I have no prejudice and am quite impartial, knowing that whatever our politicians do will be wrong, I understand the outlook of the U.S.A. I do so agree

with the writer in *The Aeroplane* of December 29, 1944, who said: "After the politician, ice is about the most serious menace that air transport has to combat." But I should put Bureaucrats second.

The British Empire delegates included Capt. Sir Frederick Tymms, M.C., Director General for Civil Aviation in India—about as wise on Air Transport as anyone we have got, and with him, representing India, was a Sikh, Sirdar Gurudayal Singh, his Chief Aerodrome Officer. The Chairman of the Indian delegation was Sir Girja Shankar Bajpai, the Agent General for India in the U.S.A.

I cannot find that any of our greater Colonies were represented, although Nigeria, the Rhodesias, Kenya, Tanganyika and others are at least as big and as populous and as prosperous and as civilised as are most of the Central and South American dictatorships which are the Naboth's vineyards of the United States.

The chief subject of debate, from the point of view of the newspaper public, was the "Four Freedoms of the Air." And to most people in these days the word Freedom ranks with Liberation and Appeasement and Planning and Social Security among the words about which one can get an easy laugh—thanks firstly to the Atlantic Charter.

Anyhow, the Four Freedoms were—and perhaps still are :

1. Freedom of innocent passage over any country.
2. Freedom to alight, to re-fuel or repair.
3. Freedom to carry passengers and freight into any foreign country.
4. Freedom to carry passengers or freight out of any foreign country.

Just why Lord Swinton, in his statement in the House of Lords on his doings at the Conference, should have called them "privileges" I cannot understand. If we are at peace with a country surely they are "rights." If, by what are called bi-lateral agreements, some countries are allowed these "freedoms" and others are kept out, then they may be considered privileges, but the excluded nations might rightly consider themselves to be in a state of war in Air Transport with the excluding nation.

These are all fairly obvious rights. Without leave for such operations Air Transport could not work. And at the

finish they amount only to the common rights of any sea-going tramp steamer. There was nothing in them about which to argue. So why the high-and-wellborn delegates of 52 nations wanted to argue about them I cannot understand. The same rights, and a whole lot of detail rules and regulations in working them, had been going happily for just on 20 years. They might have been taken as read, but for the fact that delegates are essentially politicians, and so *must* talk.

Anyhow, four agreements were made :

1. *An Interim Agreement on International Civil Aviation.*
2. *A Convention on International Civil Aviation.*
3. *An International Air Services Transit Agreement,*
and
4. *An International Air Transport Agreement.*

Here I am quoting my old friends and enemies of *Flight*, who seem to have followed the Conference very closely. To the ordinary person such as myself all four agreements seem to amount to just the same thing, but apparently they are not to International lawyers—I believe that these gentlemen prefer the title *Jurisconsults*.

The first agreement, which 34 nations (including us) signed, set up a Provisional International Civil Aviation Organisation of a technical and advisory nature, of signatory sovereign states, to last until a permanent organisation was created but not longer than three years. As some of the signatories seem to have been representatives of *émigré* Governments, and seeing what happened to the *émigré* Governments of Poland, Greece, Serbia, and one might add France, the validity of the document three years later did not look too promising.

This curious organisation, called an Assembly, was to have a Council of not more than 21, elected for two years, and “adequate representation” must be given to members “of chief importance in Air Transport.” Why not say who was of “chief importance” and draw lots for the 13 who are to stand down? Presumably Great Britain, the U.S.A., Australia, Canada, Holland, Sweden, Switzerland, Belgium, France, New Zealand, and India, in about that order of importance, would be permanent. And a lot of the signatories are probably of no importance if one reckons what they are doing themselves, apart from

what more important nations are doing for them. What, for example, is the amount of Air Transport owned, operated, maintained and piloted by natives of Afghanistan, Egypt, Irak or Persia, Honduras, Ecuador, Venezuela, and others.

The Convention (Document No. 2) was signed by 32 nations. It set up a Permanent International Civil Aviation Organisation. What else was No. 1, anyhow? It also was to have a Council of 21, but for three years. Why the difference of a year?

This precious document had 96 articles—which, among other things, set up codes of operation for aircraft and personnel; provided rules for health and safety; recommended methods of duty, customs and immigration, and equipment (called facilities) for navigation.

This, I am told, was where the U.S.A. nearly stole a march on us. They had all their rules and regulations cut and dried and taped. If it had gone through as it was, and if it had been accepted by all the nations, we should have had to build our aircraft to U.S. safety factors, and to have made them work to U.S. take-off and alighting rules, and we should have had to regulate our navigation radio beams, aerodrome control rules and everything to please the technical highbrows of the U.S.A.—or else keep out of the countries which had signed the Convention.

Fortunately the Conference agreed to a twelve-member Air Navigation Commission of "Technical Experts" to draw up a suitable Code. So there was, at the time, some hope of a workable British-plus-U.S.A. scheme being made. Which was wise, because if we had to alter our aircraft to suit a U.S. code they would be spoliaed, although the war has shown that in each category of warplanes a British design with a British engine, or engines, has always been at the top.

The Convention did recognise that each state has sovereign rights in the air over its own land and water, and that no scheduled international air service may be operated into or over a contracting state without authorisation. Just what is the difference between that and what is called a "bilateral agreement"—an agreement between the two sides concerned—I cannot see.

An interesting point is that "right of cabotage depends on such permission, but each state undertakes not to grant or take exclusive cabotage rights." Cabotage, I may explain, is no relation to sabotage—as practised by fifth columnists or patriots (according to the side you are on). Cabotage consists in picking up passengers or freight in a port of a country and delivering them or it at another port of the same country or empire. Thus in the good old days of Imperial Airways a passenger who wanted to travel by K.L.M. because it was faster could not book by K.L.M. from Singapore to London (or to Rangoon, or to Calcutta). That would have been cabotage. But he could book from Singapore by K.L.M. to any foreign country. And if he wanted to go to London he could book to Amsterdam and then re-book thence to London.

Which, of course, is sheer nonsense. All it means is that a country which runs inefficient lines of its own—as will probably happen with the National-Socialist lines, when their newness has worn off and the air crews and ground crews have discovered that they are bloated bureaucrats—can stop more efficient foreign lines from calling at their ports and pinching their passengers and freight.

The third Agreement had to do with the three last Freedoms. It dealt with the right to fly across foreign territory without landing and the right to land for non-commercial purposes. That seems obviously fair. But the rights are granted only subject to each contracting State reserving the right to withhold them. If a State were not convinced that an Air Transport concern was owned and controlled by nationals (subjects) of a controlling State, it could stop that concern from using its airports. For example when, in 1922-23, as a history of the world's air lines shows, practically every little country, and some big ones, in Europe and South America had "National" air lines which were equipped with German aircraft (mostly Junkers) and largely owned by German financiers, for remember, although the German nation was broke, German finance had millions stored away in neutral countries—such firms as the Norddeutscher-Lloyd and Hamburg-Amerika had plenty of money.

Although at that time no German engine was allowed, under the Treaty of Versailles, to give more than 200 h.p., yet those low-powered German passenger craft were all over the

H

place. Their success showed astonishing business acumen and energy. And the aircraft were run by German pilots and crews with equally astonishing regularity and safety.

This Agreement was signed by 26 nations—Afghanistan; Ecuador; France; Egypt; Greece (representing what Government?); Haiti; Honduras; India; Irak; Lebanon; Mexico; Netherlands; New Zealand; Nicaragua; Peru; the Philippine Commonwealth; Poland (again which Government?); Spain; Sweden; Turkey; U.S.A.; Uruguay; and Venezuela. One notices the omission of San Marino, Andorra, San Salvador, Nicaragua, and a few other puissant Sovereign States.

The Ministers for Denmark, and from Thailand (Siam), which I thought to be an enemy State in alliance with Japan, signed also. The Swiss delegate had no power to sign. And Lord Swinton signed for the United Kingdom with the reservation that "failing notification of the inclusion. . . this agreement does not cover Newfoundland."

The whole thing is comic. Newfoundland, the most poverty-stricken of our Colonies, as well as the oldest self-governing, was on the verge of starvation till the Atlantic Ferry brough British, Canadian and U.S. money into its huge aerodrome at Gander Lake. And the names of some of the other States just give one to smile—until one considers that they *are* important because they sit right across an arterial air route, as, for example, Persia and Afghanistan sit across the direct route from the Mediterranean to Sin Kiang (Chinese Turkestan) on the way to the interior of China, if anyone wants to go that way. That great pioneer Freiherr von Gablenz, of Luft Hansa, flew by that route only a few months before war began in 1939.

According to history King Solomon grew rich because his Kingdom of Israel sat across the caravan routes from Mesopotamia and the Black Sea to Egypt. Thus he could levy toll on all freight and passengers on that route—only the impolite would call it blackmail, and doubtless he kept up good roads for them in return. And doubtless some little no-account Sovereign States will keep up a good aerodrome, with first-class radio equipment, invented, as Radar was, in England and made in quantities at a lower price in the U.S.A. or in Germany.

The last point of argument at Chicago seems to have been the Air Transport Agreement. Only 16 nations signed, besides

the U.S.A., and of these nine were of the little American Naboth's Vineyards—Dominica (San Domingo); Ecuador; Haiti; Honduras; Mexico; Nicaragua; Peru; Uruguay; and Venezuela. And of the Europeans only Sweden, Turkey and Denmark signed.

The agreement adds three more "freedoms" besides the original two, making five in all—namely, the right to disembark (debark, or deplane?) in a foreign country traffic originating in the State of origin of the aircraft; the right to pick up ditto, ditto; and the privilege of carrying traffic between the territories of any other signatory States. Thus, I take it, an all-black Haitian freighter could legally carry goods from Turkey to Sweden, so long as my friend Carl Florman of A.B. Aero-transport did not object. Which would legalise internationally the existence of the aerial tramp.

But I notice that there is a snag. These last three "freedoms" relate to through services on a route which is "a reasonably direct line out from and back to the country of the aircraft's origin," and the signatories agree "not to interfere unduly with the regional services in their efforts to establish and operate such through services." One can see that grand pioneer of Air Transport Monopoly into and out of the U.S.A., Juan Trippe of Pan-American Airways, trying hard "not to interfere unduly" with the regional services of Haiti and San Domingo, formerly known together as the Island of Hispaniola.

No wonder that Mr. Don Iddon, in *The Daily Mail* of December 8, 1944, wrote that Lord Swinton's face as he "cleared his desk in his sixth floor hotel suite" was almost as grey as his hair, after five weeks of back-breaking struggle at 16 hours a day, drafting memoranda, planning, preparing, cajoling, arguing. Iddon put the position rather well. He said: "Britain came to the conference tables of Chicago determined on security, and regarding the air as an element offering real threats to her position as a Great Power. The United States came to Chicago fully conscious of her superior civil aviation equipment, her experience, personnel, and sheer 'know how.'"

I may interpolate here that I doubt much whether U.S. equipment is at all superior. In the U.S.A. they have an unfortunate way of mistaking quantity for quality. And the

history of Imperial Airways under George Woods Humphrey shows that we are certainly not beaten in experience, personnel and know-how, no matter how "fully conscious" the U.S. may have been.

I remember Juan Trippe arriving at Croydon from Paris in a Handley Page Hercules, at which that great pseudo-Usanian Cy Caldwell had thrown the jeer that it embodied "built-in head winds." Woods Humphrey greeted him with the words, "Well, Juan, what about the built-in head winds?" and Trippe answered, "No, George, it's built-in pay-loads."—He was right. They were slow, but they paid.

Mr. Iddon continues: "The Americans decided in the very first round to press their advantage and get in on the ground floor of the industry that means power and profits.

"If the United States was (*sic*) to get its way, then the air would have to be 'free' and reconversion to civilian flying speedy and uncomplicated. The Americans had little use, and less time, for regulating the world system; they wanted, and still want, wide-open competition.

"The United States proposed that her planes should be allowed 'innocent passage'—delightful phrase—over all countries. In other words, fly wherever they wanted when they wanted. This meant that the valuable network of pre-established routes hewn out by British sweat and toil in the British Empire should be dissolved into 'free' air."

There I am all in agreement with the U.S.A. If we cannot make better aircraft and give better service, then we deserve to go under. U.S. automobiles have pushed English motor-cars off the roads of the Empire, and serve us jolly well right for not going all out for the world's markets instead of letting ourselves be tied down by motor-tax dimensions for the sake of our own paltry little home market, in which, even so, the U.S. automobiles collared most of the semi-luxury trade—at any rate the trade of the people who wanted something flashy.

We could not keep their automobiles off our roads by our horse-power tax (so-called) and we cannot keep their airplanes off our air routes by legislating in our own favour. So let us

go back to the good old English way, and say, "Let 'em all come," and then push them out of the air by giving the users of Air Transport what they want above all else—Safety, Speed and Service.

Of course there has to be some sort of Central Body, or Council or Board, formed by mutual agreement, to formulate rules and to see that they are kept. But that is not the same thing as an International Socialist Authority, which would own and operate all Air Transport. That would mean a World Tyranny like that of the Aerial Board of Control described by Kipling in *As Easy as A.B.C.*, and by Michael Arlen in *Man's Mortality*.

These dear good Internationalists never seem to be able to see that an International Air Force, which would grow naturally out of an International Merchant Air Service, would become an International Prætorian Guard, or force of Janisseries; and that the Officer Commanding would become the World Dictator, which Napoleon Bonaparte; that gifted Neapolitan, and probably Adolf Hitler, that equally strangely gifted Austrian, aspired to become. If some of these International Controllers had their way we should have to arrange another Conference to get what an Indian delegate at Chicago called "the Sixth Freedom"—Freedom to Breathe!

But an International Association, such as the Citeja and the Iata, composed of representatives of the competing firms, can make all the needed rules. And the members will stick to them because doing so pays.

A friend who has had long and close experience of International Air Transport wrote to me thus:—

"It is possible that the world is not yet ready for a new Convention on the lines proposed." (In the White Paper). "My idea was that the proposals might have been more palatable if they had left control of operational and traffic questions to carriers, as they have been left to Shipping Conferences for the last hundred years. It seemed to me that that might have helped to bridge the major difference over commercial questions which exists between the British and Americans, and all the other fifty-two States sitting around like ignorant sheep or frightened rabbits or gibbering monkeys."

CHAPTER VI.—THE RUSSIAN PROBLEM

Russia chose to keep out of the Chicago Conference, giving as reason that Russian delegates could not sit at the same table as the Swedes and the Swiss and the Spaniards. Russia has always been to us Western Europeans an inscrutable oriental mystery, and to-day, under Marshal Stalin, is as much so as it was under the last of the Czars, or under Ivan the Terrible, or under Rurik the Scandinavian, who conquered the Muscovites, or the tribe of Mosoch, and gave his name to Russia.

We call Russia the Union of Socialist Soviet Republics, or U.S.S.R., but such Russian Air Transport craft as have come west have been labelled U.R.S.S., for Union des Républiques Socialistes Soviétiques—French being the polite language of Europe. And URSS is close to Ursus, the Bear, which has been the Russian type-animal for many years, analogous to the British slumbering lion or the U.S. screaming eagle or the French crowing Gallic cock. The bear has sat on his own pole in his own bear-pit for so long that nobody knows much about him.

To those who want to know something I commend a study of the maps of Russia at various periods. An excellent series was published in the *Geographic Magazine* for December, 1944. It showed the little Principality of Moscow in the Middle Ages; the Great Russia of Peter the Great; the slightly larger Russia of and after the Napoleonic Wars, which included Eastern Poland; the much-expanded Russia, including Siberia to Lake Baikal, and the conquered Ukraine and Caucasia of the middle 19th Century; conquered Turkestan and Siberia to Vladivostok and Kamschatka by the end of the century; and the steady occupation of Mongolia and the trend towards Sinkiang (Chinese Turkestan) more recently. In fact one sees that Russia has occupied or conquered more of the Earth's surface in a shorter time than has any other Power—including our predatory selves.

So when a Great Power which holds so much territory refuses, after a series of such immense military victories, to discuss International Air Transport, there seems to be something queer somewhere. The Russian objection to the three Minor Powers seems to have been that they were neutral during the war, with a tendency to help Germany. Also democratic

middle-class Switzerland, which has no aristocracy or upper-class, had refused to enter into diplomatic relations with Russia since the Red Revolution of 1918, and there was the particular objection to the Spaniards that they had sent a small "Legion" to fight against Communism in Russia.

When one recalls that Russia supplied most of the arms for the Spanish Red Army during their Civil War, together with tanks and aircraft and pilots and maintenance crews for both, and a lot of staff officers and fighting men, that does not seem unnatural.

Switzerland, surrounded by Germany and Italy, supplied masses of bomb-fuses, machine guns, and gadgets to the Central European Powers. But the Swiss supplied many thousands of watches and things to us by way of Vichy France and Spain.

Sweden supplied iron and steel and ball-bearings to Germany, but we got a lot of their special products, by flying them out over Norway.

Spain sent wolfram and mercury to Germany, but sent us our share also, and we got iron ore from the Rio Tinto mines, which have British money in them—besides which we got the Swiss watches, and a lot of Frenchmen who escaped into Spain and were passed through to Gibraltar on the plea that they were French Canadians. We got pretty nearly as many Free French fighting men that way, thanks to Spanish courtesy, as we did of volunteer *habitants* from Canada. So we seem to be about quits with the neutrals, and Mr. Churchill's compliments to Spain were well deserved. There is no anti-Swiss or anti-Swedish feeling in this country. So why the anti-Spanish feeling among a small but vociferous section of our people?

Anyhow, the Russians stayed away from Chicago and announced that they intended to make agreements of the bilateral kind with each country separately. In other words Air Transport between Russia and any other country will not be a "Freedom" or a "Right" but, as Lord Swinton put it, a "Privilege." And that is what flying over Russia has always been.

Few sections of the history of the world's air lines are of more interest than that which tells of Russia's Air Transport. It began with a branch of the Junkers air-line network, the Deutsche-Russische Luft Reederei, known officially as the

Deruluft, running between Berlin, Königsberg and Moscow in 1923. And the Deruluft went on running after the Junkers lines were merged into Luft Hansa. Later on Luft Hansa got the privilege of flying from Moscow to the Caspian Sea and on into Persia. But no nation other than the Germans had the privilege of "innocent passage" into Russia at any time or place.

The Junkers Co. set up a factory in Russia and taught the Russians a lot about how to make aircraft. And certain U.S. firms set up factories and taught them how to make engines. The "Secret Luftwaffe" had the privilege of renting a large aerodrome in Russia and using it as a training establishment. In fact the Germans were very much the "most favoured nation," till the Russians had learned from them all they could. Which was quite right and proper, and in accord with international custom—or ordinary commercial practice in fact.

In those years between the beginning of the enforcement or order after the Red Revolution and 1939, when this war began, Russia's air lines grew at a great rate. By 1924 they had, besides the Deruluft, lines from Moscow to Kazan; to Tashkent and Alma Ata on the Sinkiang border; to Khiva and Bokhara and "Golden Road" Samarkand; to Tiflis and Baku, where the oil comes from; to Kharkov and Odessa and Kiev, where pogroms were once so common, in the Ukraine. This last line had the glorious name of Ukrvozdukhput.

If you compare those distances with our little efforts by 1924 they are surprising. But the history of the world's air lines shows many more surprising things than that in its Russian chapter.

By 1931 the main Russian air network, the Dobrolet, had its feeder-lines down the Yenesei in Siberia towards the Arctic Sea, and its main line through Omsk and Irkutsk, across Lake Baikal to Chita and Vladivostok, a run of 8,000 kilometres, or roughly 5,000 miles. That was as far as any Russian main line could go. But by 1934 the major branch lines and feeder-lines ran up to a total of 44,307 kilometres (I like the exactitude of the odd 7 kms.), which is curiously close to the figure in *miles* of Mr. Juan Trippe's Pan-American Airways. But whereas friend Trippe performed all the way round South America and across the Pacific to Hong Kong and the Philippines and to

New Zealand, most of it once a week, or once a fortnight, the Russian network was all over one land-mass and under one Government, and generally once at least per day.

After the first few years, when German and a few British aircraft were used, the flying-stock was all Russian. Most of it was medium size stuff, because apart from privileged members of the Party, such as Kommissars and official people—and perhaps a few mere Proletarians who were privileged to be taken joy-riding as a reward for boosting the output of factories or collective farms—there would be few travellers, and no paying passengers as we understand them. The air lines existed actually for mails, official freight and Very Important Passengers—the V.I.P.s of our own wartime air lines. You see, in Russia, with the clear-cut class-distinction between the Red Army Aristocracy, the middle class Party, and the mere Proletariat, everything goes by privilege. Something like our old countryside proverb: “Kissing goes by favour,” which again is all according to natural law.

An effort was made at one time to build big passenger craft, usable as bombers. In photographs of May Day celebrations in the Red Square in Moscow one often sees four-engined craft overhead, and some six-engined. One particular six-engined job of enormous size, with an immensely high fixed undercarriage and a long snout, was called the “Maxim Gorky,” and a humorist naturally described it as “the maximum of gawkiness.”

It, or another one like it, came to pieces in the air and killed 15 or 16 passengers, including General Baranoff, the General Officer Commanding the Red Air Force—whom a friend of mine who knew him well described as being always the best-dressed soldier in Europe. That was in 1932 or so, which shows how far the Russian Army Officer Aristocracy had already progressed along the way of evolution which always follows revolution.

Whether the Russians will want to buy British or U.S. aircraft in the years following the war, as they accepted Lease-Lend fighters and bombers during the war, remains to be seen.

Although their aircraft factories could not turn out enough warplanes they may make enough for Civil Air Transport. Their shortage may have been caused by lack of skill rather than by lack of tools or floor-space. Mr. Joseph Davis,

the U.S. Ambassador in Moscow before the war, who was taken round and shown everything, said in his book, "Moscow Mission," that he judged that the output of a Russian factory was not more than about 60 per cent. of that of a U.S. factory of the same size and number of workers—although strikes and slacking could not happen under the strict Russian regulation of labour. Nevertheless, they may well be able to supply all their own needs in Air Transport.

Whether any foreign air line will want the privilege of flying to and from Russia also remains to be seen. Judging by the way the Russian High Command refused to all officers of the United Nations the privilege of going anywhere near the front line, the air lines of foreign nations will not be welcomed to Russia with any heartiness. Possibly a few "thus-far-and-no-farther" airports will be established along the frontiers, so that V.I.P.s and technical specialists may trans-plane there from foreign to Russian aircraft and contrariwise. But I cannot see that the right or freedom of innocent passage will be agreed for all and sundry airlines by the Government of the U.R.S.S. at any International Conference here or hereafter.

The Atlantic Charter, signed or unsigned, does not interest the Russians, nor does it seem to apply to their near neighbouring States or their air lines. Russian relations, as the Good Neighbour to all the Good Naboths along the frontiers, seem a little like those of the U.S.A., but the technique is different.

CHAPTER VII.—WAR-TIME AIR TRANSPORT

The *argumentum ab hominem* is still the best kind of argument so I present herewith the experience of a friend of mine in the Army which conquered Africa, and, later, most of Italy. Twelve days for the 700 miles from Algiers to Naples is not a good advertisement for Air Transport, even in war-time. He wrote:

This is where I come to the funny part that will interest you because it is all about Air Travel, and I really feel it should be called "Air Travel in War-time (1944)" or "Should Air Travel be Government controlled?"

I'm quite sure the Censor knows that you know that air travel out here is run by the U.S. Air Corps. They mostly use old Douglas machines. Naturally, when lines of communication became lengthier in North Africa, Army Commanders and 'Me Toos' soon discovered that air travel was the answer, and I believe all they had to do was order a kite from R.A.F. This became too much of a good thing, and finally, the 'Yanks'—how I hate the word—just took over and started a proper air service. They soon prospered, and all sorts of people scrounged lifts up and down the country.

To wit, there is the case of an R.A.S.C. driver who, after two weeks doing damn all at his depot, became absent without leave. Two months later he appeared again, having scrounged a lift by air to England. He spent 14 days at home—which is the period allowed for disembarkation leave—and then reported to the authorities, was tried by court martial, given 28 days' detention, and returned to his unit. His C.O. in North Africa was justifiably vexed and plonked the bloke in clink only to discover, somewhat naturally, that he couldn't punish the chap again. The driver was vexed, and again disappeared by air to England, and is now serving 18 months' detention.

This is rather beside the point, but is supposed to be true, and this sort of thing just had to stop. Therefore the wonderful system of Priorities was introduced.

A priority board, consisting of a Squadron Leader and two junior Army officers, was formed, which meant three Staff jobs. All applications for air passage went to this Board, and they merely approved or disapproved. Of course, in the case of Americans they could only approve, as it was their service. Accepted cases were marked Priority 1, 2, 3 or 4, and baggage allowances were 40 lbs., and 200 lbs. for change of station.

In my case, I decided to leave on Zero Day, as there was no point in hanging around Algiers, especially as the H.Q. Mess where I lived was some distance from town and one could not get back after 1700 hours. Therefore, I was told to go to the Mad House (A.F.H.Q.) and collect my authority. This was not difficult, and it consisted of a letter in quadruplicate signed "By order of General Eisenhower." Then I had to take this to "movements," where they retained a copy and

typed another letter to the Transport people requesting them to give me passage to Italy.

While in Movements Office an American Red Cross girl came in asking for a copy of a certain telegram. She was told that it was forbidden to make copies of Secret Telegrams, but she might have a "Look-see." The message was apparently too lengthy for her to memorise, and she pointed this out to the officer, who said, "Waal, kid, I suppose you carry a pencil and notebook, so go right ahead."

To continue my story. I went down town to the Air Transport Office, only to be told I could not leave the following day as all passages were booked. This seemed quasinormal, but I was then told I might have to wait three days as I only had Priority 3. After an exchange of two old but good jokes with the American officer, he agreed to 'phone H.Q. and get me "shoved up" to Priority 2. The military telephone exchanges are overworked, to say the least, and it is often difficult, and sometimes even impossible, to understand the W.A.A.C. operators as they all chew gum. After some delay my acquaintance said to the operator, "Say, Miss, do I have to marry you to get a connection?" It worked, but we were told that only people returning to units could have Priority 2. This was on Zero day.

On Z plus 2 day, having paid six visits to the office, I was getting a bit bored, so went out to the Airport and saw the Head Man—an American Captain. I'd met him before in Gib., and he was most friendly and assured me, if I liked to turn up the following day with a ticket; he'd pack me on a "ship." But the booking office refused to play, and all ships were weather-bound on Z plus 3 day. In the meantime, my Brigadier was mumbling something about sending me by sea—a ten-day journey. But Eureka, on Z plus 6 day, I was given my ticket and told I could leave the following morning at 0800 on a special flight direct to Naples.

This was news indeed, and with delight, the following morning, I set out for the Airfield. One always expects to do a little "Mañana Industry" at airports, even in peace-time, but in this case we had to wait some two hours, and to my horror my kit weighed 270 lbs., but having discovered the Pilot was taking off with load in hand I altered the figures on my ticket to 200. And so 16 passengers finally became airborne

at 1005 hours in an old Douglas transport. Gone were those comfortable peace-time seats. We sat on metal stools, which were most hard on the posterior. All passengers were given Mae Wests, which they looked at rather glumly and wondered vaguely what they were. No instructions were issued as to their use.

I looked at my companions as we were already over the sea, and it meant craning one's neck to look out of the window. There was quite a mixture of British and American officers and other ranks. On my right was a Brigadier, British, and on the left a subaltern of a Lancer Regiment, complete with corduroys, desert boots and pullover *a la* Eighth Army. Nobody talked and I read passages at random from Liddell Hart's "The Way to Win Wars." How I love that book, and how easy it seems to win a battle.

At about mid-day we were over land and passed a number of villages. The Brigadier said, "Good show, what. Algiers-Naples in two hours." I replied, "I don't think this is Naples, sir; in fact, I suspect it's Bizerta or Tunis." "What? Absolute rot. They assured me we were flying non-stop. I have an appointment at 4 o'clock."

He proceeded to insist we were approaching Naples and obtained confirmation from the other equally ignorant passengers. I nearly exploded. "Sir, the distance between Algiers and Naples is about 700 miles, which means, sir, we must have flown at 350 m.p.h." "Bah," he replied, "following wind." I refused to give in, and mentioned casually that I had done a bit of flying now and again.

This aroused interest, so I proceeded to point out the direction of sun, Arab dwellings beneath us, all recognisable by their courtyards, speed of aircraft, time of flight, etc., etc. By the time we landed I was considered quite an informative person, and, of course, we were in Tunis. More hanging around, only to be told that we would have to carry on next day owing to adverse atmospheric conditions.

I had by this time resigned myself to the inevitable and thought here was an opportunity to visit what was to me a new city. More tales to tell my grandchildren. We put up at an Officers' Transit Hotel, which at one time had obviously been one of the best pubs in town. Here I discovered one of the advantages of being a Major, in that I had a room to

myself. After a wash I decided to explore Tunis, and soon found a number of bombed buildings. What amazed me was the amount of Italian spoken by civilians. I then discovered that the population was 70,000 Arabs, 57,000 Italians, 45,000 French and 17,000 Jews. The place was poverty-stricken and shops more or less empty.

Troops were mostly American. After walking for some two hours I went to the cinema to see my second film in seven months. Dinner was not bad, and the bar had two amusing Venetian bar-tenders who told me many tales of the German occupation. One barman, with tears in his eyes, said (in Italian), "Major, the swines took absolutely everything from us. Would you like a drop of pre-war Martell; it costs 150 frs." So typical.

I was called the following day (Z plus 8) at 0600 and reached the airport at 0700, to find some 60 other passengers. Tickets were requested for Algiers and Sardinia. There was terrific confusion between the soldier and officer clerks. Most of them sat around a stove smoking huge cigars, and if a passenger dared to ask a question he was told to wait. In despair I went to the snack bar for a coffee and bully sandwich. The woman in charge was Italian and the three men serving coffee were Spaniards. They apparently escaped to Tunisia during the civil war, were interned by the French, and released after the occupation. One of them had been away since 1937 and had not received news of his wife and children since. I sympathised and told them of my small part in their civil war, which seemed to please them considerably.

At 09.30 a clerk called for tickets to Palermo and Naples. There was quite a rush, and some 40 tickets were collected. They were sorted out in priorities and only 10 passengers could travel. We then took turns in asking different clerks what we were to do, but all we could elicit was the remark, "Waal, sir, right now we're working on a special to Naples and I don't know if you'll get on it." The plane—and others for other destinations—left, and at 14.30 we were told to return the following morning.

Another night in Tunis, and my tummy was craving for a good meal. I asked the barman. "Go to the Hotel So-and-So," he said. "But don't go to the main restaurant. There's another the other side of the hall, which is Black Market, and

small." I soon found this to be true and enjoyed a succulent dinner of soup, soufflé, fresh boiled fish with mayonnaise, roast pork, crêpe suzette, coffee, crème de menthe, and some pre-war wine. And this place was quite openly Black Market.

Again the following morning (Z plus 9) I went to the airport early and by this time was regarding the affair as most humorous;—little things—for instance, a clerk saying to his officer, "Don't let me forget to put these documents on the Cairo ship, they are urgent."

With a little wangling I managed to have my name put on the Naples passenger list, but it was soon removed because a Major-General with batman and driver arrived, plus 900 lbs. of baggage. The operations room was still working on the "special," but we never saw the machine.

A special was fixed, but for Algiers; much to the delight of the passengers, who loaded their baggage on a truck and drove all round the aerodrome looking for ship 897. But they couldn't find it, and returned to the office, only to be told that it had taken off empty and that this sort of thing might, after all, happen once a year. I remarked that it was a bit early in the year to start.

An hour later a clerk went around shouting, "Does anybody want to go to Cairo? There is one seat left for Cairo." No buyers. By this time I knew the chaps who were on the machine with me from Algiers pretty well. The Brigadier had disappeared, but there were two American privates on their way from Algiers to Naples for a week's rest in Capri—travelling Priority 2. An American Major was returning to Naples from a week's leave in Oran, and was already three days overdue. And there was another American, this time a Red Cross worker, returning from a week's leave in Casablanca. Of the British, three officers were going to have a look at the battlefields. And a couple of Naval Officers hoped to rejoin their ship in Naples.

At about three in the afternoon we were again told it was hopeless but they'd try and put on a special the following day. I immediately went to our Movement Office in Tunis and succeeded in stepping up my authority from 3 to 2.

I felt pretty smug about that and arrived at the airport at 0615 the following day (Z plus 10), but the first clerk didn't

turn up till 7. One of us asked what time they were supposed to open. "Six o'clock." "But you've only just arrived." "Yeah, I know, but the lights went on at 6.15."

At this stage I knew all the clerks, and we got pretty friendly with each other. Again I was placed on the passenger list for the early service, but was soon removed with two other blokes because Priority 1 freight arrived, which I strongly suspected contained spirituous sustenance for our American brothers. This was really too much, but I was at last the first to go out on the next ship.

Whilst strolling between tarmac and snack bar, or I should say, wading through the mud between these two points, I saw a machine approach, and jokingly asked the pilot, "Going to Naples, chum?" "Sure," he replied, "this is a special." I simply flew back to the office, grabbed a clerk and told him the good news. Within an hour the machine took off with 18 passengers. Well, I thought, 700 miles in eight days is not bad going, after all; I only did 240 miles in six hours by car run a week before. We were soon over the sea, and I dozed with satisfaction only to hear a bellow in my ear, "Pantelleria over there." I looked and saw an island which couldn't possibly be Pantelleria. Isn't it extraordinary how ignorant people are geographically? The island was one of the Egadi group off the West Coast of Sicily. I just didn't bother to argue with my Lancer friend.

Finally, I saw Vesuvius and the Bay of Naples. How many years was it since I had been there? Five, six? No, it was 1930—13 long years ago. We landed, and I really felt it could not be true.

What a journey—which wasn't over, because we didn't have a truck. I saw an Italian Gunner Captain and approached him to ask if he knew where Allied Forces Headquarters could be found. He explained, and added he was delighted to meet a real Englishman who could speak Italian. Then he proceeded to give me the "low down." All Italy spoke of our Salerno landings two weeks before they took place, and the civilians in the town and villages were evacuated to make way for a crack German division. If this is so then I have still greater admiration for our fellows who made the landing. This officer had walked from Central Italy after our landing hoping that we would cut through Italy like a cheese-knife,

but he and many others were disappointed. Food, he told me, was plentiful, but entirely controlled by the Black Marketeers. He, I noticed, looked healthy and well fed.

I then espied a Brigadier in a Staff car. He was obviously about to fly somewhere, so I politely asked if I could borrow his car to go to A.F.H.Q. He agreed, probably because of my cheek, and off I went."

That is as far as we need to follow the adventures of my young friend, who is one of those fortunate folk who cannot walk across a road without meeting an adventure of some sort. He has in some three decades learned to speak and write four languages equally well, and three others rather less well, so he was able to enjoy his journey better than a less able linguist would have done. As an example of State-owned, State-run Air Transport under war-time conditions, his experiences may be valuable.

CHAPTER VIII—THE OPEN AIR

The U.S.A. say quite openly and honestly that the air is their affair. Probably they have not had the privilege, or freedom, of reading that interesting book compiled some ten years ago by Mr. (now Wing-Commander) Nigel Tangye called, "The Air Is *Our* Affair." Thanks very largely to the pioneer work done by the Royal Air Force and by Imperial Airways, and by the old Aéropostale Co. and by Luft Hansa, and later on by their own Pan-American people, U.S. Army Transport Command found itself with ready-made airways from the States across the Caribbean Sea, down Brazil to Port Natal, across to West Africa, all across Africa, and so, either by way of Cairo and Baghdad, or by Aden and the Hadhramaut to India and over the Hump to China. The U.S.A. had also on its own account developed lines across the Pacific by the way of Canton Island, a tiny but well-placed British possession, to New Zealand and Australia. And the U.S.A. naturally said, long before these Conferences, that they insisted on the freedom of the air and that they intended to run air transport over those routes. Which, after all, was quite natural.

We, on the other hand, simply say, "We have all the best bases in all the best places." In fact, we are much in the position of that eminent firm, Keith Prowse & Co., the theatre ticket agents, whose advertisement used to read, "You want the best seats; we have them." In passing, I may remark that I knew a man who called his two dogs Keith and Prowse for that reason.

On March 13, 1919, (please note the date) Mr. Joynson Hicks, later Lord Brentwood, and now dead, said, in the Debate on the Air Estimates—"Years ago we had command of the sea because we had the coaling stations of the world. To-day we can have the command of the air because we have the landing stages of the world." Just lay that to heart, and think of it, along with the talk about Freedoms.

Naturally, as we have all the best bases, we expect something in return from the United States. Which I take it means that if U.S. air lines are going to operate all over the British Empire, British air lines ought to be allowed to operate all over the United States.

On this subject of conferences and committees I quote here a letter which appeared in *The Sunday Times* on November 12, 1944, from Captain L. D. Gammans, M.P., who said, "The years between the two wars, also an age of international conferences, were a sorry record of short-sightedness and national selfishness. But what made it worse was the feeling which apparently existed in all the democracies that the failure to achieve any agreement whatsoever must at all costs be hushed up by some platitudinous resolution which meant precisely nothing, or by the device of appointing a series of committees or sub-committees to consider the subject further.

"The result was a dangerous cleavage between Governments who realised that nothing had been achieved, and the people who were all too willing to be lulled into a sense of false security. Surely, if a conference has failed, it is best to say so, and then we all know where we stand. This is especially necessary in a democracy, where no Government dare act far in advance of public opinion."

He goes on, referring to the Conference in Chicago, "It seems obvious already that it can achieve little at the moment which is likely to count. Apart from the Russian refusal to take part, there is a cleavage between the American and

British points of view. The average American as an individual firmly believes in the principles of private enterprise and free competition, and has little use for 'chosen instruments,' whether national or international. He has merely carried those principles into international trade relations, and we may as well realise it. If we are to have any share whatever in the Civil Aviation of the world, we must be prepared to compete with all the energy and skill at our disposal. Although we may start with an initial handicap, we are not without ability to do so. The skill of our designers, pilots and craftsmen, is second to none; in the Empire we have a chain of vital bases.

"The sooner we face up to the position the better. Don't let us delude ourselves that any international co-operation is probable at the moment, and for Heaven's sake let us resist the temptation to try to prove some ideological theory of the virtues of State ownership of Civil Aviation in what is likely to be a most ruthless international competition."

In this you see that he agrees definitely with views which I have already set forth, although he is looking at them from a different angle. The less we have to do with committees the better. Let us remember the wisdom of the M.P. who said, "If Moses had been a committee the Children of Israel would still be in Egypt." I am all in favour of the policy of the Open Air.

This seems to be about the right place at which to remind people that some time in 1919, when he was doubling the parts of Secretary of State for Air and Secretary of State for War, Mr. Winston Churchill delivered himself of the dictum that "Civil aviation must fly by itself." At that time, if my memory is right, he was opposed to anything in the way of State aid or subsidies, even indirectly, through the free issue of aircraft or equipment or anything of that sort. But I think that he was agreeable to payment to air transport operators of high rates for mail transport.

That was strictly logical because, as anybody who has any knowledge of shipping knows, the high-speed liners, on whose performance we English particularly pride ourselves, can only get that performance because of the mail subsidies. Logically, the same principles should be applied to air transport. I have always held that belief myself. If anything

cannot sell itself to the public, possibly a strictly limited public, or if the public will not pay the price, then it has no right to exist. And that applies equally well to Government activities. Dr. Beveridge has sold his Social Security scheme to the public by sanction of Parliament. Whether in the end the public will go on paying the price remains to be seen.

But high payment for mails of some sorts is not a subsidy; it is payment for services rendered. Nevertheless, subsidy payments can be justified when a service is new, because in the public interest that service ought to be kept going till the public are, to use a U.S.A. expression, "sold on it."

On this subject a public statement by Mr. J. H. Patterson, President of United Air Lines, U.S.A., is interesting. In the U.S. weekly news magazine, *Time*, for September, Mr. Patterson says, "Before the fourth year of peace, we in United Air Lines expect to see domestic air transportation increased five-fold over its best pre-war year, and international air routes making neighbours of all the cities of the earth."—Good old, Good Neighbour.

"But aviation can realise its great expectations for peace and prosperity only if the nation's air lines, which are now out of the subsidy class, can retain their economic independence."

Then he makes a very important suggestion. He says, "For wasteful subsidies will not help to ensure aviation's further progress. There is no feeling of security while living under subsidy, because ideas about the amount of subsidy vary with each administration and vary with the personality of the people involved. In the long run, all that subsidies can do is clip aviation's wings."

"I believe most men in aviation would agree that we wish to see our business progress on its own, receiving revenue on the basis of services performed. And in order to make sure of this, we must consider how best we can serve this country rather than our own selfish interests."

There you have an excellent exposition of the self-reliant independent citizen of the U.S.A. and his views. That ought to be the attitude of every Englishman who believes in air transport.

Before the end of the war, in fact, in 1943, British Overseas Airways, thanks to its backbone of old Imperial pilots

and aircrews and ground staff, were running the air line between Scotland and Sweden some hundreds of miles an hour faster than any air line in the world, with British-designed and built Mosquitos. On November 4, 1944, a Mosquito pilot, Ft.-Lt. James Linton, and navigator Warrant Officer Edwin Goudie, flew to India from England in 16 hours 46 minutes. And in June, 1945, four Mosquitos in a bunch flew to Karachi in less than 13 hours. The fastest took only 12½ hours.

For a year or so I had been going round the country talking to people on behalf of the Air League of the British Empire. One of my favourite arguments was that in 1934 a de Havilland Comet, piloted by Charles Scott and Campbell Black, had flown from Mildenhall in Suffolk to Melbourne in Victoria in 72 hours at 160 m.p.h., that James and Amy Mollison (Amy Johnson) in a similar machine, had flown from Mildenhall to Karachi in 22 hours, and that on such showing we ought to have had a three-days air mail to Australia early in 1935. Reasoning on the fact that the Mosquito is much more than twice as fast as the Comet, I said that as soon as we got the Japanese cleared out of the East Indies we ought to have an air mail to Australia in 36 hours, and to India in 24 hours, and to the Cape in 15 hours.

Before the end of 1944, B.O.A. had demonstrated that even my figures, which looked fantastic when I started preaching, were needlessly high. Which only shows that we have nothing to fear from foreign competition.

At a meeting of the Royal Aeronautical Society in November, 1944, Brigadier-General Critchley, Director-General of B.O.A., said the same thing, with considerable vehemence, and in terms which prompted the grave and reverend Royal Aeronautical Society to disown the sentiments expressed by General Critchley. The *Daily Telegraph* was sportsmanlike enough to publish a letter in which I said frankly that we needed a good deal more of the buccaneering spirit of General Critchley, and that, anyhow, competition was good for trade.

As I have said, appeasement in this international war in Air Transport cannot pay any better than did appeasement at Munich. Our good friends and allies and competitors in the United States can take straight talk just as well as we can. And so I believe can the Russians. Several writers in 1944

commented on the fact that the Russians have developed the habit of talking straight, as in the matter of refusing to join the Chicago Conference. And probably we shall hear a lot more straight talk from the Russians and from the U.S.A. during those four years in which, according to Mr. Patterson, aviation will learn to fly by itself, and I hope that our people will talk as straight to them.

The British Empire was not built up by being mealy-mouthed and diplomatic, which is only another way of saying appeasement. British diplomats in the past got the name of being the world's most expert liars because they had a curious habit of speaking the truth, which lots of foreigners did not understand. And the more we speak the truth about air transport the more likely we are to keep our end up.

In "The Importance of being Ernest," Oscar Wilde says, "It is undoubtedly one of those occasions on which plain speaking ceases to be a duty and becomes a positive pleasure." This you will agree is such an occasion.

There was one phrase of General Critchley's which evidently shocked our appeasers and is likely to be misunderstood in the States. He claimed that we in British air transport know better how to look after our customers than do the L.S.A. operators, and added the queer phrase, "In America service means servility, and they have no real idea of service to the passengers as we understand it." I think that it what is at the back of that phrase of Kipling's story, "An Error in the Fourth Dimension," about the U.S. millionaire, of whom he wrote, "He even learned to forget his manners, or which he had great stock, and set more store by manner."

Some of you will remember a song popular in the U.S.A. twenty years or more ago, the refrain of which was, "But that's all done by the Argentines, and the Portuguese and the Greeks." The things that were done were all the menial, servile jobs, but the song went on to tell how, at the finish, as the result of being servile, the best suites in the best hotels were occupied "by the Argentines and the Portuguese and the Greeks."

I have not been in the States for more than 20 years, but one did feel then that the "service" given in hotels and restaurants was given with a sort of veneer of polish or manners which had obviously been overlaid, one might almost say plated

onto, the natural independence of the individual. It was not accompanied by the friendliness and at the same time respect that one gets, say, from a good Irish servant or a good Negro servant, or even from a good Englishman, who has learned that a self-respecting servant can be respectful to others as well. And that acquired polish and servility can be more offensive than is the deliberate disrespect of the cocky Cockney young working man whose attitude is, "I am as good as you are and a damn sight better"—till he learns better.

CHAPTER IX.—COMPETITION

So far as international air transport is concerned we need not for a good many years bother much about any competition other than that of the United States. Russia may come into the business later on, but for a while I fancy that apart from necessary commercial or political air transport the Russians will not go far outside their own vast empire and certainly will not welcome visitors to it.

Likewise, we need not discuss Germany, because nobody can tell for quite a while what the ultimate peace terms will be. Nor need we discuss France because the French, for all their feminine resilience, will need some years in which to reconstruct themselves and justify their return to the position of a Great Power. But as between the United States and ourselves I feel that we can carry on an Air Transport war in the most friendly spirit, always remembering that "Win, tie or wrangle" has been the U.S. motto in sport and business since such things began.

I will finish this section with another reference to that absurd idea that an internationally owned, controlled and operated Air Transport organisation should cover the world. I cannot understand the workings of the mind, if any, of a politician, who will uphold such an utterly impracticable idea. How can any individual believe that, the human animal being as it is, any group of Governments of any nation can agree on such a problem?

In this we shall do well to remember that throughout history no nation has ever kept a truce or an agreement for a day longer than the keeping of it paid. Whenever a treaty has ceased to be a paying proposition politicians have found a good reason for repudiating it or breaking it or withdrawing from it. The only thing which keeps a treaty is self-interest.

We might easily argue that keeping an agreement to run and own international air transport would be a paying proposition for everybody concerned. But would it? It would mean having an international Board of Directors. And in every country there would be continual intrigue and scheming to get rid of one or other of the Directors and to get freedom in the building and operating of air transport craft. But there is a more important and serious aspect than that. An internationally owned and operated air service can only exist so long as it is backed by an internationally combined and operated fighting air force. And that would be one of the most dangerous things that the world could create.

Quite often Members of Parliament in this country have held forth on the idea that the peace of the world can only be assured by an international police force of the air. Not long ago some figures were published which showed that if such a police force were manned according to the relative populations of the Allied Nations we should have somewhere about four British aviators to about twenty Russians and about forty Chinese and, I think, about eight U.S. aviators. Now does that strike anybody as a reasonable proposition?

Here are we admitted by everybody to have the finest air force in the world, the best war machines and the best-trained and skilled pilots, navigators, bomb-aimers, gunners and ground crews. Remembering the numbers of U.S. troops including the Air Corps people in this country, we should probably not kick at having three people from the U.S.A. to one of ours, but I do fancy that our people might object to being completely outnumbered by the Russians and Chinese. And even if we brought in our Indian Air Force on the same basis, our R.A.F. people might still object to being out-numbered in the ratio of about seven to one by our Indian fellow-subjects, assuming that India could find enough aviators up to the stan-

dard required for an International Air Force, to make up the proportion.

But even that is not the chief reason. The danger would be that if such an International Air Force were formed, and if it were trained to the pitch which would be needed to give it the power which a Police Force should have, and if it acquired the discipline and devotion to its officers which it ought to have, then the officer commanding that International Police Force would become practically the Dictator of the world.

Some of you may remember that the Prætorian Guard of the later days of the Roman Empire made and unmade Emperors as it willed. And in the same way the Janissaries, the personal guard of the later Sultans of Turkey, also made and unmade Sultans.

All philosophers agree that the ideal form of Government is a benevolent despotism, but that the difficulty is to assure a succession of benevolent despots. And a dictatorship is merely another word for a despotism. A cynic has added that, failing a succession of benevolent despots, the next best thing is despotism tempered by assassination. But history as a whole teaches that the two forms of government which have stood the test of time best are the limited monarchy and the republic.

On this subject the great Mr. Dooley, of the Archey Road, Chicago—an imaginary figure invented by the late Mr. Dunn, a U.S. journalist—remarked to an imaginary friend sitting in front of the bar in Mr. Dooley's saloon: "Hinnessy, the difference between a limited monarchy and a republic is that in a limited monarchy the king does what the people tell him and then blames himself, whereas in a republic the President does what he damn well pleases and then blames the people."

If that is not historically accurate, it is near enough to the practical truth to give a fair idea of how countries may be governed. And between properly governed countries treaties may be brought about which are worth keeping by both sides because they pay. And only on that basis can air transport ever pay its way and fly by itself.

I hardly think that anybody is foolish enough to believe that this war will end war any more than did the war 1914-18, although we were assured of it so many times by the politicians.

But if only the little nations will learn to appreciate the natural law of the expanding community and will get together for self-defence and form, in our own particular case, a United States of Western Europe; then we of the British Commonwealth of Nations with, our neighbours the United States of Western Europe, may make a friendly and trustworthy alliance with the United States of America and manage to form a self-interested community to keep the peace of the world. With that arrangement we may be able to keep the peace without again bringing Atomic Bombs into action.

CHAPTER X.—AND SO WHAT?

Apart from that I commend to my readers the wise words of an old friend of mine, a Dutchman who has been concerned with aviation for the past thirty years or more and holds an important position under the Government of one of the few nations which are still independent and out of the war. In a wise letter on the general situation he says: "This world is not out of its difficulties, my friend. For quite apart from all these territorial and other 'geo-political' problems (to use a word dear to our enemies) that will have to be straightened out, there is the enormous problem of the social upheaval, bound to come after this war. Many people seem to think that once peace, or rather quiet, has returned life will re-commence where it stopped in September, 1939.

"What a fallacy! There can be no doubt that as a result of this war very radical changes will occur in our social structure, which changes—though they may be evolutionary and carry other names than Socialism, Communism, or other-isms—will bring the essentials of the future social structure much nearer to revolutionary Marxism than the old principles of the cumulative capitalist society of the pre-war period."

Personally, being, as I said, no politician, I am neutral. I could be equally happy as an 18th Century nobleman with a vast estate and retinue, or as a mid-Victorian capitalist with a mansion and horses and carriages, or as a Hollywood millionaire with motor-cars and bathing-pool, or as a kommissar

whose vast house, regiments of servants and State automobiles always at command were provided by the State, along with the ability to give banquets which start in the afternoon and finish after midnight and are so well supplied that 24 toasts or more can be drunk. Whatever the ideology somebody is always on top—and the working man pays.

In the meantime, everything seems crazy and looks like being so for the next ten years. But shall we help to establish International Trade and Air Transport if, as seems our policy, judging by the way we have done things in the so-called liberated countries of Europe, after co-operating with the "Underground" we commit ourselves to collaborating with the underworld?

Not even the Marx Brothers could have staged anything funnier than the International Air Conferences at Ottawa and at Chicago, in November, 1944. As I have already recorded, Canada had already taken to National Socialism in airways by squashing the Canadian Pacific efforts and starting Trans-Canada Airways, which is owned and operated by the State. The Australian delegates, Mr. Drakeford (the Air Minister) and Mr. McVey, arrived with instructions to go one better, and propose International Socialism in airways all over the world. They wanted an international authority to own and operate all airways, which would bar completely the owning or operation of any private air transport. Which seems to be slap up against the Atlantic Charter, because one can hardly expect every nation in the world to agree to such a proposition, and any nation which did not agree would be frozen out by the use of that effective Irish political weapon, the Boycott—of which the English equivalent is being "sent to Coventry."

In some curious way the British Empire delegation agreed and went off cheerfully to Chicago to the International Conference, where our gallant Allies, the U.S.A., went and threw not a spanner but a sledge-hammer into the works, by going all reactionary and anti-Socialist, and proposing that the air shall be free to all and that everybody shall have the right to land where and when and how they like and carry what and who whence and whither they choose—especially all the U.S. pilots.

On top of that all the 14 or 40 or whatever they were delegates from the little Naboth states of Central and South

America, also voted for the Atlantic Charter against Internationalism, and so our quaint representatives of the British Empire were practically laughed out of court.

The result means Free Trade in the air, to blaze with the New Deal and all its Government controls, and back to the good old law of the jungle, and "devil take the hindmost," which is a good game so long as the United States has all the transport aircraft. And here is where I advise my readers to wait and see.

There are two distinct points of view. One is that we should not do anything about developing British air lines in foreign parts until we have enough British aeroplanes to do the thing properly. That might mean letting in the U.S. airlines and incidentally French and Belgian and Dutch, while we were sitting waiting for our aircraft. The opposing point of view is that we should get hold of all the obsolescent or modern U.S. aircraft that we can buy, beg or borrow, and get British air lines going all over the world. The native indigenous populations are not going to worry whether the aircraft are English or American or German or French so long as the lines are well-run and are safe compared with other air lines. They will travel British because of the management of the line and not because of the aircraft. And then, as one of our oldest English aircraft constructors has said: "The more U.S. aircraft there are in the air the more there will be for better British aircraft to replace."

And against that there is the argument of one of our most experienced airline operators, that if we once get an airline running with foreign aircraft in that way, it may have a hundred thousand pounds worth or more of spares in the form of engines and spares, and if it changes its type it is going to be a long and costly business. That same argument applies if you change the type of locomotive which you use on a railway or the type of bus which you use on a road route, or the type of steamer which you use on a steamship line. If you are a transport operator you must be prepared to scrap all your transport vehicles and their spares with them at the end of a certain time. But the great thing is to get your lines going and to win a reputation for safety, comfort, punctuality and service without servility.

And before that I believe, and much earlier than people think, we shall have the world's best aircraft and best airlines. But we may have to wait years before we discover whether they are to be run by private enterprise such as built up our Merchant Navy, or by monopolist organisation.

At the finish of the Chicago Conference, after all those days of time wasted by a large number of highly-paid intelligent men who might have been doing something useful to get on with the war—and, I admit, taking up of the time of a number of men whose time can best be employed when it is wasted, so as to keep them out of mischief—the Governments of the world found themselves back precisely to the year 1919, when every nation was free to make its own agreements with every other nation. That is what people mean by a bi-lateral agreement—there are two sides to it, just as there are to a quarrel. And at the finish we look like having a very sensible arrangement about air transport.

Let me again remind you that in 1919 the Governments of the various Allies (25 of them) and the neutrals, of whom there were several, appointed delegates to an Air Conference and formed a body known thereafter as the Citeja, which stood for the Comité International Technique et Juridique Aéronautique, which meant the International Committee for Technical and Legal Aeronautical Affairs. And it did its work admirably.

When it was due to have a meeting its delegates thought up any points technical or legal for discussion, and they sent those points with the arguments about them to all the delegates of all the other countries and they discussed them all in a friendly way through the post and arrived very likely at an agreement all round. Then when the Committee met in person, at the capital of one or other of the countries concerned, everything was already practically agreed. One member of the Committee was chosen as what was called the Rapporteur. His job was to boil down the findings of the Committee into a report which was then checked over by the technical people and the legal people of the countries concerned and it was all drawn up in proper form, translated into the different languages of the different countries, after which it was ratified by the Governments of each country, and had the force of law behind it.

Thus absolute agreement was reached in all the regulations concerning air transport. Wave-lengths for radio were settled, legal liabilities for damages to passengers, or the sitting upon of a house by an aircraft in transit, and so forth and so on. And so it had by mutual agreement of all the countries concerned all the effect on air transport that any International Socialist authority could have, plus the advantage of being internationally democratic without forming in any way an international oligarchy such as the Ottawa Conference would have created if it could—and without the danger of the international oligarchy turning into a pure despotism as it quite easily might.

Consequently I feel that we ought to be grateful to the United States for the sledge-hammer which it threw into the works. In the making of all these bi-lateral agreements the United States delegates will find themselves continually bumping into delegates from the other countries which are also making bi-lateral agreements. And as each country which wants to operate air lines will necessarily have to make bi-lateral agreements with each other country we shall in the end arrive at a whole network of agreements which will lead exactly to the old Citeja idea.

The technical and juridical representatives of the United States will find that they will have to adjust their ideas to fit in with those of other nations. And I can only hope that the Conferences of the Citeja of the future, like those between the wars, will give us international meetings which will produce the same sort of international good will and party spirit.

But failing that, are we to look forward to a purely Socialist world according to Karl Marx, or a "chosen instrument" chain-store world, politically and economically planned, according to Marks and Spencer, or a purely mad, irresponsible world according to the Marx Brothers?

PART 4.—OUR CIVIL WAR IN THE AIR

CHAPTER I.—THE TROUBLES OF BRITISH AIR LINES

Now we come to one of the most entertaining problems in this all-embracing problem of our own Civil War. Who is going to run the Air Transport of the British Empire?

The history of Air Transport shows that, like other nations, we started in 1919 with several little air lines and a lot of taxi firms who gradually, according to the Law of the Expanding Community, merged or were absorbed into bigger concerns until at last Imperial Airways, Ltd., had a monopoly of all overseas flying. But in fact it was only a monopoly of subsidies for services outside Great Britain. If anybody with enough money had decided to run overseas airways in competition with Imperials, and had produced air-worthy craft and crews, there would at that time have been nothing to stop them from operating. In fact when, ten years or more later, a fresh crop of small internal air lines had been started without subsidies, they again merged with one another, and the only remaining lines which operated to the Continent, were British Continental Airways, Ltd., and British Airways, Ltd., who were running with only postal subsidies. They merged into British Airways, and then were forced into the B.O.A.

In the meantime all the internal lines had, by just before the war, been interlaced and hooked up by the acquisition of shares by the railway companies, until there were no independent operators left except North-Eastern Airways, Ltd., and Gandar Dower's Allied Airways, Ltd.—so called, I suppose, because it was entirely on its own, a sort of Lone Wolf among airways.

The British Overseas Airways Corporation had been formed as a Public Corporation before this war began, but it did not operate until early in 1940. Nevertheless it was already what was known as the "Chosen Instrument" of the Government, which had agreed that no other line should draw a subsidy. During the war no other line could operate. Even the lines which had independent names and carried mail freight and passengers to Eireland and North Ireland, the Outer

Islands in Scotland and the Orkney and Shetlands, except Mr. Gandar Dower, had all been linked up with Imperial Airways, Ltd., which in turn was mixed up with B.O.A.

Outside B.O.A. the only genuinely civil aircraft which operated from this country were those of K.L.M. which had escaped from Holland or been ordered back here from Italy during the break-through in 1940 and had been efficiently organised by Captain Spry Leverton and had done most useful auxiliary work flying between England and Portugal.

As the war dragged slowly to its close all the transport interests in this country began to sit up and take notice and wanted to have a finger in Air Transport. B.O.A. was not much interested because it was sitting pretty on its Act of Parliament and the Government's commitment to make up any losses which it might make in operating. As a Public Corporation it has no shareholders' meetings at which directors can be badgered, and as it is not a Government Department no Minister can be held directly responsible for its mistakes. It does not even have to maintain that useful personage invented by the late Mr. Pelissier, of The Follies, an "Official Explainer for the Debenture-Holders," because there are no debentures.

For that reason the Public, which pay the wages of a Public Corporation, can get no satisfaction when it wants to protest against the inanity or the vulgarity or the subversive political broadcasts of the B.B.C., or when, because of stupidly-placed bus-stops or badly-timed services, it wants to know whether the London Passenger Transport Board exists to give service to London Passengers or whether London Passengers exist for the amusement of the L.P.T.B. A question in the House only produces from the appropriate Minister a washing of hands and a statement like that of Achaia's Deputy, when he said: "I care for none of these things." No Totalitarian Government is so free from control as is a Public Corporation.

A short look-back on how all this happened may be useful. Apart from joy-ride and air taxi firms, British Air Transport proper began in 1919 with four definite air lines, (a) Aircraft Transport & Travel, Ltd., founded by Mr. George Holt Thomas, founder of the Aircraft Mfg. Co. Ltd., which built De Havilland warplanes; (b) Handley Page Transport, Ltd., founded by Mr. Frederick Handley Page, who built big bombers; (c) The British Marine Air Transport Co. Ltd.,

founded by Mr. Hubert Scott Paine, of the Supermarine Works, and later of The Power Boat Co. Ltd.—Supermarines were then building flying-boats; (d) the Instone Air Line, founded by S. Instone & Co. Ltd., coal owners and merchants of Cardiff, who bought a couple of 3-seat D.H.9s for quick communication with their branch in Paris, where they were doing big business, and let the spare seats when their own staff did not want them.

A.T. & T. Ltd. was wound up by the B.S.A.-Daimler group who had bought it and The Aircraft Mfg. Co. Ltd. from Holt Thomas, and its place was taken by Daimler Airways, Ltd., started by Lieut.-Col. Frank Searle, D.S.O. and Major George Woods Humphery, who had been running Daimler Hire, Ltd., with Daimler cars.

These four firms ran to Paris, Brussels and Amsterdam, and later to Berlin and Prague, but could not make profits, so Air Vice-Marshal Sir Sefton Brancker, who had been made Director of Civil Aviation, partly persuaded and partly bullied them into combining as Imperial Airways, Ltd. George Woods Humphery became Managing Director, with Sir Eric Geddes as Chairman.

Under the able direction of Woods Humphery, Imperials steadily drove their line through the obstinate Middle East to India and on to Singapore. There they hooked up with Queensland & Northern Territories Air Services, Ltd., always known as Qantas, founded in 1919 by Mr. Hudson Fysh, with which firm Qantas Empire Airways, Ltd., was formed. This was later extended with New Zealand's co-operation to form Tasman Empire Airways, Ltd. The whole history in detail is another of the great stories of the world's air lines.

In the meantime internal air lines were slow in growing. Our climate is all against such things. So although there was a lot of private flying, and a good deal of taxi flying, there were no proper scheduled air line services until after 1930. I imagine that the reason was that people who wanted to fly from A to B were ready to hire a taxi when the weather was good, but that when the weather was bad there were not enough passengers to keep a regular service going.

Captain H. H. Fresson started a mail line from Inverness to the Orkney in 1934. The way he ran that line with inadequate aircraft for the first year or two was quite heroic.

In the same year Mr. Sidney Hillman started an unsubsidised air line to Paris. Hillman's career from running a one-man bus service to being the owner of a great network of motor-buses was a romance in itself. His ambition to become an air line owner was praiseworthy, and he very nearly made a big thing out of that too. He deserves particular mention because the D.H. Dragon was designed specially to meet his needs for a cheap reliable 8-seater passenger machine, and within a few years Dragons were flying all over the world.

Then a Mr. Thorogood, another self-made bus-line operator, started Jersey Airways, and made a success of it. And there were others too numerous to mention here, though they all have a place in the history of the world's air lines.

The next phase came when the railways began to muscle in on this flying game. When the motor-bus and long-distance high-speed coaches were put on the road the railways were caught napping. They looked on these things with scorn and carried on in their mid-Victorian way as if there could be no competition. And so they found, about 1920 or 1921, that many of their passengers and much of their freight were becoming road-borne. They fought back by all means, fair and foul—and as the railways control, in one way or another, a large lobby of Members of Parliament, they are a bad interest to get up against. And they learned a lesson.

When Air Transport came along seriously, and air lines began to develop, the railways determined not to be caught a second time, and took powers by Acts of Parliament to alter their Articles of Association so that they could operate aircraft as well as rail, road, canal, and steamboat services. Here I may remark that very early in their existences railways bought up the canals of England, which were paying well, and deliberately killed them so that freight would be frozen off the waterways and forced to pay the higher rates of railways. And they tried to kill road transport by buying up motor transport lines, or by influencing legislation against them. One trick was to influence the local police to trap the long-range motor-buses and prosecute the drivers for exceeding the stupid 30 m.p.h. limit which is imposed by law on all road vehicles which are above a certain weight.

With those histories in view naturally all who wanted to see Air Transport develop were against letting the railways

get hold of air services of any kind. The railways had already shown their enmity towards Air Transport. John Sword, another self-made bus-line owner, who earned big money as a director of Scottish Motor Traction, started a network of air lines in Scotland. S.M.T. was hooked up with the London, Midland & Scottish Railway. John Sword was told that he must either drop his Scottish Airways or be dropped by S.M.T. He dropped the Airways.

Another case. North Eastern Airways were building up a nice little business between Scotland and London. A Perth garage man who ran a sort of travel agency and sold tickets for N.E.A. was told that if he did not drop N.E.A. he would get no more tickets to sell for the railways or their bus services.

That form of tyranny was being fought in the Law Courts just before war began in 1939. But those were only some of the ways in which the British Railways fought Air Transport. As I have said, the Southern Railway bought a block of shares in Imperial Airways, ostensibly to develop cross-Channel air services as an auxiliary to their antique steam-boats. Then they formed Railway Air Services, Ltd., and chartered aircraft and crews from Imperial Airways with which to run their own air services in competition with their own rail and road services.

The Great Western interested themselves in the lines to Jersey and to the Scilly Islands. The L.M. & S. got into the Irish Sea and Scottish air lines, after freezing out John Sword, and raked in Fresson's line to the Orkney. The details of all these manœuvres and machinations belong to a regular history of the world's air lines. But you see how all the air lines in this country came at the finish into the grip of whatever financial powers behind the scenes control the Railways which were grouped under the Ministry of War Transport, with their steamship lines and canals and road transport, *and* the B.O.A.

How it works passeth human understanding. But the fact remains that they have a holding in the air lines I have already mentioned and there is nothing to stop them from starting other air lines up and down the country as and when and where they like. And the railways can swing so much political influence that they would have little difficulty in getting a subsidy if they wanted it for any given line.

But there are other interests such as North Eastern Airways, who are determined to run air lines for freight and passengers even if they can get no mail contracts, and are prepared to lose money by doing it without a subsidy until they can pay their way. So the question must arise sooner or later whether the Government is so much under the influence of the railways, which themselves will certainly be nationalised sooner or later, and in favour of the B.O.A., that it will put its foot down flat and say that it will forbid any air line to run other than the Chosen Instrument.

CHAPTER II.—THE STEAMSHIP INTERESTS

Here the most powerful faction of all comes into the argument. Several of the great shipping companies were determined, away back in 1943, that they would run Air Transport. The group which uses the South Atlantic for the South American trade, which includes the Royal Mail Steam Packet Co., the Blue Funnel Line, and the Booth Line which runs up the Amazon, altered their Articles of Association to allow them to operate Air Transport.

Elder Dempster's, who run to West Africa, had done that some time before the war and had already registered Elder Airways, Ltd., in conjunction with Imperial Airways, Ltd., on the West Coast, so they are now presumably hooked up with B.O.A. Just how a public or private limited company can hold shares in a Public Corporation, or how a Public Corporation can hold shares in a private company, is difficult for the ordinary person to understand.

The South American group chose the title of British Latin-American Airways, Ltd. I think that the title was unhappy. In these days, when initials are made into words, "Blaa" may not inspire the respect which is due to a very serious and patriotic commercial undertaking. I have been told that they had much difficulty in finding even that title. Other people, seemingly, had the bright idea of airways to South America, and every imaginable title seemed to be already registered. The most obvious and most suitable, South Atlantic or South American Airways, had been collared. British

Argentine Airways would have offended the Brazilians and so the shipping people had to do their best with what the alphabet and the atlas provided for the other neo-Latin republics.

On the other side, towards the Orient, the big steamship interests were equally determined to run Air Transport. Major R. H. Thornton, of Alfred Holt & Co. Ltd., of Liverpool, set forth clearly, wittily and impressively, at a Royal Aeronautical Society meeting in November, 1944, good reasons why steamship firms should operate in the air and what would be expected of them.

Here you will do well to remember that in the expansion and merging of the many small Australian air lines, the biggest merger, which roped in the Honeymen interests and formed Australian National Airways, was backed by the Orient Steamship Co. And now that and all the other Australian air lines have been National-Socialised, so one never knows what may happen. That is what makes the history of the world's air lines so interesting right back to their earliest days.

I had several talks with big steamship people. And their views were that unless they were directly forbidden by the Government from operating air lines they would make a success of it. Their argument was that by running their fast steamships more slowly they could save a lot of money, and that they were prepared to spend that saving in running airways without subsidy.

If the Government liked to be sensible and appoint to be their chosen instruments on certain air routes air lines which the big steamship lines had organised, then the shipping companies were prepared to be chosen instruments and to give the taxpayer good service for their subsidy. But if the Government chose to put up another Public Corporation like B.O.A., or if it chose to let the B.O.A. branch out on other routes—as a sort of chosen octopus rather than a mere boa-constrictor—then the steamship companies were ready to fight.—The result of their threat may be seen in the White Paper.

There is, naturally, the possibility that the whole British Empire may go pure Marxist and that the steamship companies and the railway companies may find themselves all raked into State institutions to be run by bureaucrats. But I do believe

that unless they are overwhelmed by Government decrees and Acts of Parliament, some steamship companies will run Air Transport and will run it well.

Obviously their first difficulty will be to get aircraft to operate. The probability is that the only firm which up to the end of 1944 had made any commercial aircraft, A. V. Roe & Co. Ltd., will be kept busy with orders for B.O.A., and that excellent institution, Qantas Empire Airways at the other end of the line. Some of the other manufacturers who have ambitions in the way of civil aircraft will probably also have B.O.A. orders. Some of the others who have ideas on the design of commercial aircraft seem likely to be still having ideas about it in 1950 and still without much output.

On the other hand there are others who, if they could have got free from the control of the Ministry of Aircraft Production, could have started to produce Air Transport machines in 1945 which would have been fit to operate within a few months. Some would have been modified warcraft and others would have been new designs which were already on paper. And here the question arises whether the Government intended deliberately to stop the shipping companies from starting operations by the simple process of blocking their supply of British aircraft. If that proved to be so I should not be at all surprised to see the shipping companies go to the United States for their aircraft. I do not think that any Government, even Marxists, for the next few years would dare to prohibit the use of U.S. aircraft by independent British air line operators—our Government policy of appeasement would stop at any such high-handed action.

The shipping companies obviously have the immense advantage of having their own organisations all over the world. They have offices, and their managers know the indigenous people, from the big merchants down to the surrounding peasants, of every port. They have all the means and the experience of booking freight, issuing tickets and dealing with documents and everything. That was the kind of business to which Imperial Airways was just nicely getting accustomed when they were swallowed by the B.O.A. The war broke out almost at the same time and their organisation came under Service control. In getting that experience Imperials were much helped by certain of the shipping companies, whose local

offices acted as agencies for the air line. And in return the shipping people learned a lot about the running of air lines, which may be useful.

One of the most amusing and at the same time practical comments on the future of Air Transport in the British Empire came to me in November, 1944, by airgraph from Mr. William Courtenay, the War Correspondent of the Kemsley group of papers at U.S. Army Headquarters which, when he wrote on October 25, were on the island of Leyte, where he had landed with the first attack wave. After some practical remarks on how to settle the Japanese after the war, on the principle "Japan is an island and the Japanese can be left on it," he says :

"I'm not worried about post-war Civil Aviation either. As you say, we shall come out on top all right if only we'll produce about a thousand air liners and flood the Empire with them. I'm all for unrestricted competition in the world's markets. We are all operating on a rising market for the rest of this century in selling commercial aviation traffic, and there's room for all comers.

"What to do with the year 2000 A.D., when saturation point may be reached, may safely be left to the General Election of that year, I think. The shipping lines should be left free to develop air lines now they are anxious to do so. The old idea of Imperial Airways ought not to be revived, because then we could not induce the shipping people to come in. Now they want to, so why prop up a Government show when it isn't needed?"

CHAPTER III.—ABOUT FLYING BOATS

An interesting question is what aircraft the shipping people will want to use when they are getting ready to operate. Naturally they, or most of them, have fondness for flying-boats. Which reminds me that some of the Navy people in the early days of flying preferred airships, or dirigibles as we called them, to aeroplanes because the airships looked more like submarines. But there is more sense than that in the liking of the shipping people for flying-boats.

One argument in their favour is that, short of absolute prohibition against all sorts of flying except by some Chosen Octopus, an Air Transport firm can operate flying-boats anywhere. There are plenty of tricks by which National-Socialist air lines or specially favoured firms might freeze out independent competition. One has only to read how Juan Trippe, of Pan-American Airways, froze out Nyrba (New York, Rio and Buenos Aires, commonly known as Near Beer) from the East Coast of South America, and how he blocked the ingress to the United States of his partners in Pan-American-Grace Airways—the Grace shipping firm whose influence got him the control of the West Coast of South America—to see how a powerful Public Corporation could block or freeze out competition on regular air routes. But a flying-boat service can operate wherever there is water and make its own routes.

Look what Imperials did when they switched over to boats on the Australian service. They jumped from Athens to the Sea of Galilee (or Lake Tiberias), from there to the Tigris, down the Persian Gulf to Karachi, across the Scinde Desert (a nice place on which to land a boat) to the Ganges, and so to Australia by all sorts of odd ports and islands. Then they jumped over to the Gulf of Carpentaria, and thence to the East Coast of Australia—ignoring most of the route which their land planes had followed for years.

By political intrigue, graft, pull, drag, squeeze or any or all of several other ways of getting things done, or stopping things from being done, jealous rivals belonging to our own or another nation might close a chain of airports to an independent shipping line. But the aforesaid rival might have a lot more trouble in stopping the flying-boats of the aforesaid shipping line from using harbours and seaports which the same firm's steamships had used for generations, and where the firm's agents were well dug in and where its influence had been well built up. Consequently seagoing aircraft can switch from one port to another or to no port at all if traffic offers.

The modern big heavy air-liner which needs a 5,000 yard runway feet deep in reinforced concrete is stuck tight to certain fixed routes where such runways have been built, whether by its own firm or government or by some other firm or government with which it has a bi-lateral agreement. In spite of all we have heard in the past about the flexibility and

mobility of air lines, a big liner of that sort is about as flexible in service as a railway locomotive. A railway company may take a loco off one line and put it onto another, but it must be on a line where it fits the gauge, and a big air-liner can only be used on a line where the aerodromes fit it.

Flying-boats, on the contrary, can operate wherever there is a wet place deep enough to float them, and long enough to give them room to alight and take off. There are far more such places, all of them ready-made aerodromes, than there are flat places on land which one could make into aerodromes. So, in operating flying-boats, the owners, or operators, or air-base organisers, are saved the time and cost of runways for land planes.

Naturally flying-boats need bases where overhauls and major repairs can be done. Probably most people think that such bases must have slipways and hauling tackle and vast quays and gantries or cranes, all at enormous expense. The Glenn L. Martin Co., of Baltimore, U.S.A., produced in 1944 a most elaborate and charming scheme for loading and unloading and beaching and launching their flying-boats, which are growing bigger and bigger with each new type. But anyone who has seen the R.A.F.'s antique floating dock at Pembroke Dock, in England-beyond-Wales, knows how needless such fixed installations are.

That floating dock was built about 1917 or 1918, and was used somewhere about Southampton, I think. Some years later it was towed round to Pembroke, and it kept a squadron of flying-boats in the air for years afterwards. It may be doing so now. The crews of the boats lived in the Naval Barracks, a ghastly pre-Trafalgar relic. So did the ground-crews who worked on the floating dock. There were workshops ashore for heavy jobs, but there was a very good little workshop in the floating dock with lathes and machine-tools for lighter work.

A similar floating dock, bigger for bigger boats, would be a satisfactory base in any sheltered water in any part of the world. The workshop crews and office staffs could live in bungalows ashore, alongside the rest-house for passengers and the offices. Such a base, using specially designed pre-fabricated buildings (Boulton & Paul, Ltd., of Norwich, have been making such things for most of a century, but reading the papers and

hearing the politicians one would think that they were an invention of 1944), could be put up in two or three weeks, while the dock was being towed round to its new place.

Many self-esteeming experts will argue that no flying-boat can compare in performance with a land-plane. That has still to be proved. Arthur Gouge, who produced the Empire Boats and the Sunderlands and the Shetland, and Glenn Martin, who produced the Mars and sundry Clippers, and Boeing (in spite of his Super-Fortresses) would back the flying-boat. And so would Bob Blackburn, for whom Major Rennie designed some of our finest big boats, all of which were ruined by having experimental engines wished onto them by the Air Ministry.—These set-backs will, I hope, be counterbalanced by the huge jet-cum-airscrew boat which ought to be out within a year or so, and should be a long step forward in Air Transport.

Anyhow a Sunderland with four Pegasus XVIII. motors flew from Poole in Dorset to Karachi in India in 33 hours 52 minutes in December, 1944—Poole to Cairo, 2,339 miles, in 16 hours 33 minutes, with one stop of 1 hour 13 minutes to refuel. Then, after a stop of 2 hours 25 minutes, from Cairo to Karachi, with one stop of 1 hour 25 minutes at Dabai on the Persian Gulf—a total of 5,039 miles in 28 hours' flying time. And that ought to be good enough for a while. Only I should like to know what one of the later Sunderlands with four 1200 h.p. Bristol Hercules engines would do, compared with the 900 h.p. Pegasus.

Besides which, newer and bigger flying-boats, with several engines, perhaps six or eight of 3,000 h.p. apiece, will obviously do better still. And there is always the advantage that, however big and powerful they may be, there will always be plenty of water on which they can sit and from which they can take off, whereas when land-planes grow bigger and heavier they are going to have trouble with breaking through their runways.

Furthermore, as land-planes get bigger and heavier their undercarriages must grow heavier and heavier to carry the added weight. Which means giving away pay-load to carry that weight and the hydraulic or electric mechanism to work it. My friend Grover Loening, the designer of some very good aircraft, especially amphibians, and now advisor on aeronautics to the U.S. Government, told me in 1943 that he was certain that the flying-boat had it all over the land-plane in the really

big sizes. He argued that undercarriages must become so heavy, to carry the enormous weight of the big aeroplanes without collapsing, that the bottoms of flying-boats, although designers would have to make them heavier also, to stand the smack on the water when alighting, would still weigh less than the undercarriages.

So there seem to be plenty of openings for the enterprise of the big shipping companies and big flying-boats as well, whatever policy the firms choose at the start. No doubt in time the shipping companies themselves will be National-Socialised, along with the railways and road transport and the mines and the banks and the doctors—with about two bureaucrats to govern each worker and order when he or she is to get up and go to bed and eat and work and rest (if ever). But probably all of you of this generation between 15 and 50 years of age will be under ground by that time. And if not you will probably have joined an underground movement to free humanity from the burden of bureaucrats. When that happy time comes perhaps Air Transport will be able to give Safety and Speed and Service.

Another point is that the big shipping companies, and any other independent operators, can have a plentiful supply of pilots, navigators, flight engineers and ground crews when demobilisation sets in. R.A.F. Transport Command has grown into an enormous organisation, far bigger than anybody, other than perhaps George Woods Humphery, imagined could be reached by Imperial Airways. Consequently if the air lines come into being, and they can buy the needed aircraft, R.A.F. Transport Command could probably man two or three organisations as big as the B.O.A. Naturally the B.O.A. itself will absorb a lot of the Transport Command people, but there will still be plenty left.

Those young men have operated all over the world. Moreover many of them were at one time in the employ of Imperial Airways or B.O.A. and had left or were left, and would be glad of the chance of putting up a bit of competition. And that in itself will make our Civil War in the Air all the heartier.

A minor factor in the affair is the possibility that some of the big road transport people, who have been fighting for years against the efforts of the railways to push them out of business or absorb them, will themselves want to get into the air with

short-range air lines or taxi lines. This again will add zest to our Civil War.

Whichever way you look at it there is going to be a lot of scrapping for air traffic. Some of it may be done good-naturedly in the way of business—a lot of it will be acid and perhaps unscrupulous. But competition is always good for trade, and the more competition there is the better our Air Transport will be in the end.

CHAPTER IV.—THE AERODROME WAR

There is another phase of our own private Civil War in Air Transport which deserves some discussion. That is the war about aerodromes. The process by which a Government Department in peace-time National-Socialises the property of municipalities, limited companies and private individuals may be interesting to watch, after all the blood and wealth we have used up in ostensibly fighting for freedom.

There is, and has been for a good many years; a well-knit, well-backed organisation called the Aerodrome Owners' Association. It is, in a way, an offshoot of the Society of British Aircraft Constructors, but it has always seemed to me to be more of one mind on things that matter than most Trade Associations. However much the individual heads of the great aircraft firms and the little aircraft firms, and their assorted officials, may like one another, there is necessarily trade jealousy between firms which make aircraft of the same sort.

Perhaps there is less than there used to be because the great Hawker-Siddeley Combine has swallowed up so many firms that a number of units which might be jealous of one another are now all in the same circus, as it were. Also Vickers Ltd. own Supermarines, and there is a hook-up between the Blackburn people and Denny's of Dumbarton, the famous shipbuilders. The English Electric Co. own Napiers, and there are several combines and mergers. So there is much less trade jealousy than there used to be.

In fact, there was a time when, according to a wicked and libellous critic, the S.B.A.C. used to pass resolutions binding

themselves to stand shoulder to shoulder against the tyranny of the Air Ministry, and, according to this person, within half an hour of the passing of the resolution and the dissolution of the meeting, representatives of the various firms would be running into one another in the dark, racing up the backstairs of the Air Ministry, to tell the Contracts Department or the Technical Department what the resolution was all about. But, of course, to-day things are quite different.

So far as the aerodrome owners are concerned, there can be little cause for jealousy. No two aerodromes are so close together that they are likely to compete for the trade of one particular area or air line, and so start price-cutting of landing fees and so forth. Apart from that, the members of the Association who represent the different aerodrome owners at meetings are of so many different kinds, and have so many different problems, that they find one another most interesting and entertaining.

The Aerodrome Owners' Association has 71 ordinary members and 18 associate members—of whom, or which, 39 are municipalities and 32 are commercial firms. The commercial firms themselves are curiously divided, because some of them are aerodrome owners as such, whereas others are aircraft firms which own and operate aerodromes. For instance, Airwork, Ltd., of Heston, owns the aerodrome, and although it has always run workshops for the repair of other people's aeroplanes, and during the war has done valuable production work for the Air Force, it is primarily an aerodrome firm. On the other hand, Air Service Training, Ltd., of Hamble, is a part of the Hawker-Armstrong-Siddeley-Avro-Gloster group, and exists primarily as a flying Training School.

Manufacturing firms, such as A. V. Roe & Co., Ltd., Handley Page, Ltd., Hawker Aircraft, Ltd., and others are purely manufacturers, and maintain aerodromes solely for the purpose of testing their own aircraft and despatching machines they have made or receiving machines which come back for repair. For the time being, at any rate, they are not interested in public air transport at all.

The municipal aerodromes, on the other hand, were started primarily so that the cities or towns which paid for their building should have an airport. But in almost all cases the aerodromes were placed and laid out with the idea of inducing

aircraft firms to build factories there, or at any rate of inducing airlines to use the airports as terminals or ports of call, and have a flying school, and generally to have a club for private owners.

Sometimes there is a strange mix-up between the two. For example, the Straight Corporation, Ltd., which was started by Mr. Whitney Straight, a U.S. citizen by descent, but English by adoption, who during the war reached the rank of Air Commodore and won much distinction on active service, was originally started with the idea of buying or leasing a chain of aerodromes at each of which there would be a flying club. The members of each Club were to be honorary members of the other flying clubs in the chain of aerodromes. Some of the aerodromes, such as Exeter, belong to the Straight Corporation, and the municipality is not interested. But in others, for example, Ramsgate and Ipswich, the municipality owns the aerodrome and it is managed and operated by the Straight Corporation on a lease. The Southampton aerodrome at Eastleigh belongs to the municipality, but for a long time before the war the Supermarine Company had their assembly shop there and did all their testing from the aerodrome, and shortly before the war the Cunliffe Owen Company built a big factory there.

Similarly, Leeds-Bradford have had a very large Avro factory on the aerodrome for years. The Nottingham aerodrome and various others have factories round their edges.

On the other side, again, Prestwick and Ayr have no municipal aerodrome, although everybody in these days knows the name of Prestwick not as a mere golf-course, as quite a few people knew it before the war, but as the name of the great Atlantic terminal from which the first regular Atlantic Ferry ran. I make that statement deliberately, because although the first aeroplanes which crossed the Atlantic in considerable numbers came from Newfoundland, that was all one-way traffic, and the to-and-fro ferry work was based entirely on Prestwick. And Prestwick is the property of Scottish Aviation, Ltd., that very enterprising firm, at the head of which is the Duke of Hamilton and Brandon—better known a few years ago as the Marquess of Clydesdale, when he was a famous boxer—and Group Captain David McIntyre, A.F.C. A fact which is perhaps odder still, is that the Duke and Group

Captain McIntyre are the only pilots who have flown over Mount Everest.

Another curious thing about that notable place is that the municipality at Prestwick are Associate Members of the Aerodrome Owners' Association, which, I take it, means that they hold a watching brief for their own ratepayers.

Another example of an odd arrangement is Sywell Aerodrome, Ltd., a private limited company. It is, in fact, the aerodrome for Northampton, which has no municipal aerodrome and so is not represented as a city in the Aerodrome Owners' Association.

Perhaps here I may be allowed to digress on a subject which concerns far more people in this country than are ever likely to be directly interested in Air Transport. The moving spirit of the Sywell Aerodrome is Mr. C. M. Newton, who has been for a number of years the Chairman of the Committee of the Aerodrome Owners' Association. Some years before the war Mr. Newton became interested in making a profitable use of the grass which is normally cut on an aerodrome every two or three weeks during the summer, and wasted. In these days of concrete runways the length of grass does not matter much, but on the all-grass aerodromes the grass ought not to be allowed to grow more than a foot high at the most. And as a properly laid-out grass aerodrome is covered with a particularly good quality of grass, to assure uniformity of surface, the cut grass, if properly handled, has very high feeding value. Also the grass between runways has to be kept reasonably short, so that if an aircraft runs off the concrete it will not have its wheels tangled in a hay-field.

The great exponent of levelling and surfacing grass aerodromes was Mr. C. P. Hunter, of Chester, the head of the famous seed firm. He studied the problems of grass for aerodromes for years, and thereby did great service to aviation. He died early in 1945, after doing great services to the farming community as well as to Aviation.

Obviously the aerodrome owners cannot allow the grass to grow to such a length that it can be cut and made into hay, quite apart from the fact that one could not have haycocks dotted all over aerodromes. And cutting about four inches of grass off the growing blades at a time and letting it lie on the ground to rot is waste of good cattle-food.

Mr. Newton developed a method of collecting the grass in boxes, such as one uses on an ordinary lawn-mower. These are attached to the gang-mowers used on the aerodrome. This grass was taken and dried in kilns. It proved to have high value as cattle-food. Tests showed that it was better than the best hay. The dried grass was milled and made into grass meal, and this meal was sold for a high price to the makers of cattle-cake.

For several successive seasons Mr. Newton cut and dried the grass on the Sywell Aerodrome, and regularly, year by year, he got one ton of cattle-food per acre of aerodrome. In other words, from a comparatively small 200-acre aerodrome he got 200 tons of first-class cattle-food for nothing, beyond the cost of cutting it and drying it.

In case some of my readers may object that continual cutting at short intervals would soon exhaust the soil of the aerodrome, I may say that once in every four cuts, I think it was, the cut grass was allowed to lie and act as a mulch. And I believe that the aerodrome was treated with lime or some appropriate substitute, which would have been used in any case on that quality of soil if the grass had been allowed to grow into hay.

For a year or two before the war Mr. Newton was allowed by the R.A.F. to put drying kilns on two Service aerodromes, and there he got just the same yield of cattle-food per acre. So when war broke out one would naturally have assumed that as the supply of linseed for the making of cattle-cake was stopped, the Ministry of Agriculture and the Ministry of Food and the Ministry of Health and other Ministries concerned would have insisted on using the grass of the aerodromes for cattle-food.

More particularly would one think so because so many of our multitudinous aerodromes were built at the start by laying waste tens of thousands of acres of the finest agricultural land in the country. Only in the last two years of the war did the High Authorities see fit to do what they ought to have done at the start, namely, to lay out as aerodromes the vast commons all over the country on which nothing grows except whin bushes and heather and gorse.

There has been a terrible outcry in Parliament during 1940-45 about this infringement of the people's rights, but

anybody who has driven across Hartford Bridge Flats or Prees Heath or Greenham Common, near Newbury, and has seen the amount of use which is *not* made of those commons and others by the commoners who own the grazing rights, and the cattle they do *not* own, will realise how purely factitious and futile all that agitation is.

Dispossessing farmers, and throwing them out to find a job or starve is easier politically than infringing the common rights of commoners who do not use the commons but have votes.

Anyhow, if the grass at all those R.A.F. aerodromes had been turned into cattle-food the milk supply of the country would have been vastly increased if not actually multiplied. As things were we lost untold tons of cattle-food, and consequently untold thousands of gallons of milk at the rate of one ton of feed per acre per annum.

There will be interest in seeing whether the Ministries of Food, Health, and so forth show any more common-sense now that war with Germany has stopped than they did when it began. All those thousands of acres of land which lie idle between the concrete runways of any of our bigger aerodromes ought to be producing food.

Early in 1945 I learned that the Air Ministry has at last awakened to the uses of dried grass, and is setting up drying kilns under the supervision of Mr. Newton at certain aerodromes. So possibly all the hard work that he put in from 1940 onwards, and the bit of help that I was able to give him in certain influential papers in about 1940-41, may at last have soaked into the heads of some of the Authorities.

Again as a digression, I may say that I have often been asked what is to be done with all these aerodromes which were littered about the country in 1944-45. Quite obviously there cannot be any possible use for them as aerodromes. They were built to take the enormous U.S. Army Air Corps and its Service Stations as well as the whole of the R.A.F., not to mention our tame International Air Force, consisting of Dutch, French, Belgians, Czechs, Poles, Norwegians, and all the rest. And if, when peace breaks out, the R.A.F. needs more than one in ten of them (men or aerodromes) I shall be surprised.

According to Government policy, as disclosed early in 1945, there was no intention of giving back any of the land

to the original owners or farmers. A Bill was introduced giving the Government the right to take possession of any land which the Services, or any other Government establishment, then occupied, which means that, having done so, it could then sell the land or the property at a handsome profit, still leaving the rightful owners and tenants to starve on the price paid for their land and house-property calculated at pre-war values.

That being so, the obvious thing to do with all these superfluous aerodromes seemed to me at the time to turn them into Collective Farms on the Russian model. The vast wasteful hangars would at any rate make first-class hay-barns. The officers' and men's messes and quarters would be occupied by the farm labourers and officials. Obviously the senior official of a farm the size of one of our big aerodromes would be at any rate a Deputy-Assistant-Kommissar, and would be entitled to a Group Captain's quarters. The land girls and men could occupy the Waaf's quarters and those of the other ranks.

Possibly by then somebody will have invented a machine which can cut the concrete of the runways up into building blocks of approved shape and size, so that they can be used for the million or two new houses which we shall have to build to replace the assorted temporary huts in the bombed-out areas, and in those areas where the population is increasing rapidly—largely those which have been occupied by foreign troops.

Perhaps some of the surplus R.A.F. aerodromes may be used as municipal aerodromes. In an interesting Memorandum issued by the Aerodrome Owners' Association in February, 1945, this suggestion is made. The only aerodromes which occur to me as being immediately convenient as municipal aerodromes are Waddington near Lincoln and another near Darlington.—I have not mentioned a number which were built before this war either as municipal aerodromes or for local flying clubs. There will not be many others near towns which have no municipal or private aerodrome already.

That Memorandum has a lot of sound sense in it. One of its recommendations is that an Advisory Council should be set up which might be called the Council of Aviation, on the lines of the Council of Agriculture, which advises the Minister for Agriculture.—Judging by results I take it that he does not accept its advice.

The suggestion is that the Council of Aviation should consist of representatives of organised aviation bodies, such as:—The Aerodrome Owners' Association; The Society of British Aircraft Constructors; The Air Registration Board; Air Transport interests (which are not yet properly organised because, at the time of writing, the only Air Transport interest was British Overseas Airways (the Boa) and the railways); the Association of Light Aeroplane Clubs, which presumably still existed though it had been dormant since the beginning of the war; the British Gliding Association, which did very good work in the early days of the war, and was largely responsible for developing the glider section of our Airborne Divisions; the Air League of the British Empire, which has been hoping, after the war, to do what the Navy League did before the War 1914-18 for the British Merchant Air Service; the Air Transport Licensing Authority (if re-established)—this is a difficult problem, because according to one Government statement the Boa itself is to be the licensing authority for any air lines that it did not want to run itself; the Guild of Air Pilots and Air Navigators; and the insurance interests. Quite a good representative list.

But I cannot see why the British Air Line Pilots' Association has been left out. The G.A.P.A.N. is rather a superior, not to say snooty, body, which disclaims vehemently any connection with Trade Unions. The B.A.L.P.A. is frankly a Trade Union of pilots, and a very desirable organisation, especially as we are going to National-Socialise our air lines in the way Canada and Australia have done. The only thing which can stand up against such impositions as the B.B.C. and the London Passenger Transport Board, which their victims cannot attack at general meetings as shareholders and cannot attack in Parliament, is a Trade Union which can organise strikes. Considering that our Government has been afraid to handle strikes during the war as firmly as they should have been handled it is not at all likely to be rough with Trade Unions in time of peace. Only in Russia are strikers judged to be enemies of the State, and liquidated without argument.

Anyhow, the A.O.A. points out that at the beginning of 1945 there were only 48 aerodromes serving large cities and

towns. Nearly 50 county towns in England had no aerodrome at all.

In discussing the need for aerodromes the A.O.A. says that the plan for British Civil Aviation should include aerodromes, flying-boat harbours, and helicopter sites; all possible British air lines (presumably whether National-Socialist or not); air taxi and charter services; flying clubs; and private flying. As this book only deals with Air Transport I shall not discuss flying clubs beyond saying that they may be very useful institutions, especially as everybody, from the Air League of the British Empire down, or possibly up, to the Young Communists' League, are agitating to get the youngsters of the country into the air.

But flying clubs and private flying, if anybody should have the money left with which to fly privately, may produce grave dangers. Every pilot who is allowed above 500 feet and outside of a radius of three miles from his own aerodrome must be subject to the most searching examinations before he is licensed to fly outside those limits, and the most severe rules afterwards. If the kind of fool who used to drive sports-cars on the road during week-ends before the war is allowed up in private or hired aeroplanes we shall have the most appalling crop of crashes.

There may be a good deal of air taxi flying, unless that also be taken over by our National-Socialist Air Ministry, and I think that air taxis, well organised, may pay much better than short-range internal air lines. Not long ago I had an interesting letter from a correspondent in the North Country, near one of our famous beauty spots, who said that he wanted to run a private air line to the Isle of Wight. Why anybody should want to link up two beauty spots by air I could not understand. I told him that surely he would stand a better chance of success if he concentrated on the North of England, and ran an air taxi service from Manchester, Sheffield, Birmingham, Liverpool, Newcastle, and the industrial North generally, to his own beauty spot. I suggested that he might adopt as his trade motto—"From the Sooty Spots to the Beauty Spots."

There does seem to be quite a general idea that we shall use helicopters quite a good deal in the future. I suppose that there again, when we have become accustomed to being

killed through birds flying into helicopter blades, and possibly blades coming off, and so forth, we shall cease to worry about dying in that way. Personally I can never quite reconcile myself to the helicopter idea. One can knock so many chunks off a normal aeroplane and still get it down that it seems a reasonably safe vehicle in spite of its demonstrably dangerous qualities. But the least touch on the blade of a helicopter or autogiro will throw the rotor out of balance, and an unbalanced rotor will pull the whole machine to pieces in a few seconds. Also it is not an alluring vehicle from which to jump with a parachute.

As I have said, the aerodrome owners work together in wonderful harmony, with practically no jealousy between one aerodrome and another. But there is one aerodrome which started in 1944 to put up a very good lone-hand fight for its existence, and that is the aerodrome of Scottish Aviation, Ltd., at Prestwick, which I have already mentioned. There seems to be quite definitely a scheme, or a plan, or, if you like it, a plot, to bypass Prestwick after the war, and, as Lord Swinton said in one of his public utterances, merely to let certain trans-Atlantic air-liners alight there to set down or pick up passengers who want to go to or leave Scotland. The patriotic Scots are determined that Prestwick shall not be made into a way station by trans-Atlantic liners plying to and from the Boa aerodrome at Heath Row, just off the Bath Road close to Heston. My sympathies are altogether with the Scots.

In the first place, I regard Heath Row as one of the greatest scandals of British Aviation. We had been assured by Sir Archibald Sinclair, then Air Minister, that the Heath Row scheme was originated for military purposes, so I suppose that we must take his word for it. But why anybody should want to build a Service station that close to London I cannot understand. Hatfield and Hendon and Heston are handier, and are quite big enough to be useful for R.A.F. communications. Though Hendon could not be extended to give a 5,000 yard runway, the others could be.

Later on we were told that the Heath Row project was, in fact, an enormous extension of the already big aerodrome of the Fairey Aviation Co. Ltd., at Harmondsworth, and was thought out by R.A.F. Transport Command so as to make a

great terminal near London for international, or Super-national, air traffic from the south and east.

That is not an unreasonable scheme, but even so there was no need to lay waste many hundreds of acres of the finest agricultural and market garden land within 25 miles of the centre of London. Quite enough of the land which feeds London has already been overrun by jerry-built suburbs without the Air Force devastating our food supply still more. So I regard Heath Row as being a scandal on a still bigger scale than the Loch Doon and Cat Firth scandals of the War 1914-18.

As I have said elsewhere in this book, our proper policy should have been to say that our longest runways would be 1,000 yards, and that foreign aeroplanes that could not get in and out of that length could stop away. After all, we do not want foreign aircraft here so much as we want to get our own aircraft there. And if we limited our runways our aircraft designers would be forced to build aircraft which could use them and, at the same time, could compete with the long-run aircraft of foreign nations.

Scottish Aviation, Ltd., produced, early in 1945, a booklet entitled, "North Atlantic." It is one of the best things I have seen dealing with Air Transport. The producer of it is tactful enough to say that "Prestwick and Heath Row, the inter-hemisphere terminals of North and South, are complementary enterprises." He, at any rate, has avoided antagonising the powerful interests behind Heath Row, and Scots are not by nature given to appeasement.

The writer of another article in the book has done one of the best passages on this airport question that has been written. He says, "The Air Transport system which serves the United Nations in war-time is like no other traffic undertaking in the world. It goes to places that do not need an airport, that never need use an airport, and probably do not know yet that they have got an airport. It skips and leaps through Latin America and Central Africa and Southern Asia. It visits lonely stations in Antarctica and the Aleutians. It has a hundred bases in the Pacific where post-war traffic potential is reckoned in terms of coconuts and copra, and a hundred more around the North Atlantic where post-war passengers will be numbered in tens of thousands per annum. It is not now, or ever shall be, concerned with the profit and

loss. It is a military undertaking, an experiment, temporary and significant and triumphant."

Now that is a glorious summing up of war-time Air Transport, and it shows how completely wrong are those people who try to make a picture in their minds of what peace-time Air Transport is going to be.

There is another matter in the book which seems to be of primary importance. The writer of another article has produced a little map of a hemisphere of the world made from the point of view of a person looking at a globe with the British Isles as the centre opposite the eye, and North and South America, Asia and Africa arranged radially round us. He emphasises the fact that the hemisphere of which Britain is the centre in this way, contains more than 90 per cent. of the world's population, more than 90 per cent. of the world's industries and manufactures, and more than 90 per cent. of potential air traffic. And he draws the conclusion that "geographical advantage is all with us." That is quite true, but, as I used to point out to a certain city in the Midlands of England, which claims to be the centre of England because it is equidistant from the coast east and west, the danger of being the centre is that one may become like the axis of a wheel, which stands still while everything else goes round it. And if we start looking on ourselves as the centre of the world we may very well find ourselves at a standstill.

If, on the other hand, we do wake up and develop our Air Transport, our central position in the middle of all these 90 per cent. of population and industry and potential traffic may, and should, make British Air Transport the most important industry of its kind in the world if it is left free to develop and is not Nazified.

Incidentally, Prestwick has one great advantage in that its main runway can easily be extended to the sea, and a magnificent harbour for the biggest of flying-boats can be built conveniently on the end of it on the open Firth of Clyde. The existing coastal railway could be taken underneath the runway in a dipped tunnel.

Apart from that, when Air Transport does develop, whether it carries rich pleasure-going people as passengers or only Very Important Personages flying at the expense of the State, or whether it carries mostly mail and freight and

samples, there ought always to be enough traffic between Scotland and the American Continent to keep the aerodrome going very well and to justify its having its own air lines.

The Boa will no doubt prefer to fly from Heath Row direct to Canada or to New York as power plants and aircraft improve, or, in the meantime, it may prefer to go to Foynes in Eireland, and take off for the American Continent from there. In any case, I do not think that Prestwick need be particularly anxious about its existence in future even though it may not continue to be the one and only terminus for all traffic to the British Isles from America.

Naturally, with the trend of social politics as it is, there is a danger, which the Aerodrome Owners' Association foresees, of the Government taking possession of all aerodromes, as, presumably, the Canadian and Australian Governments have done, because one cannot make air lines a National Socialist undertaking without also nationalising and socialising the aerodromes on which they operate.

The A.O.A.'s chief objection to the Government taking over the aerodromes of its members is that to do so another huge Government department would be created to control, man and operate the aerodromes, and the final cost to the Government and the country would be much greater than it would be if the present system were allowed to go on. Also the A.O.A. points out that losing municipal and commercial interests in the aerodrome side of civil aviation would be fatal, whereas allowing it to continue would assure the lively interest and co-operation in the future of civil aviation of the inhabitants of the cities and towns which have aerodromes.

The A.O.A. advocates the setting up of an Aerodrome Board under the new Ministry of Civil Aviation. This Board should be a Statutory body on lines similar to the existing Air Registration Board, which has the job of certifying that all civil Air Transport machines are airworthy. This Aerodrome Board would consist of representatives of the Ministry of Civil Aviation; the A.O.A.; air line companies, the flying school operators; aircraft constructors; and the insurance interests. It would deal with such matters as licensing of aerodromes; the characteristics needed to secure safety; the standardisation of radio and other flying controls; the

standardisation of lighting and other technical equipment; the co-ordination of planning; meteorological services, and the classification of aerodromes.

Let us hope that the aerodrome owners as they are at present will be allowed to continue in a sound and sensible way. Hitherto they have set everybody an excellent example of friendly co-operation and collaboration with excellent results for everybody concerned.

We are supposed to have been fighting this war for the past six years in the cause of freedom. Unfortunately the war has shown us that there is so little difference between liberation and liquidation that nobody would be very much surprised if the aerodrome owners, instead of being given liberty to expand their activities and possibly their aerodromes, to make themselves more efficient and of greater use to the aeronautical community and Air Transport, should find themselves liquidated and absorbed into one vast Aerodrome Command under some official of the new Ministry of Civil Aviation when it has had time to acquire its own offices and its own collection of bureaucrats.

The writer of "North Atlantic" makes one very good point, namely that in Air Transport time has become a fourth dimension. In fact, we seem to have gone back to Biblical days and earlier, when a journey was measured by time and not by distance, and men spoke of "a day's journey" or of "a Sabbath day's journey" to show whether the journey was long or short.

In "A Diary of a Pilgrimage," Mark Twain wondered whether an Oriental tailor, measuring a customer, noted that he was so many seconds round the waist. Personally, I have for many years believed that the Orient actually begins at Monaco. Alongside the tramlines up to Monte Carlo is a signpost, at the foot of a mule-track up the mountainside, which reads "*La Turbie, une heure.*" In middle age I have done that journey many a time in 25 minutes. I think it is about the farthest point west at which distance is officially measured in time, and at Oriental speed.

Measurement by time is, in fact, the essence of Air Transport. Whether New York or Cairo is farthest distant from London does not matter a bit. What does matter is how long it takes to get to either.

CHAPTER V.—THE WHITE FLAG PAPER

For historical reasons I reproduce hereafter all of the White Paper (Cmd.6605) issued by His Majesty's Stationery Office on March 20, 1945. This is headed "British Air Transport, Presented by the Minister for Civil Aviation to Parliament by Command of His Majesty." It is interesting to have about the house, because it gives one a look inside the minds of the people to whose care the infant British Air Transport had been committed. And there will be some fun in the years ahead in looking back and seeing the ludicrous foundation on which some people tried to build our Air Transport.

It struck me as a sort of white flag, waving in one direction towards the National-Socialist or Communist Totalitarians, and on the other, towards Big Business and International Finance, as if its composers did not know which side they wanted to win, but were ready to compromise with either, according to whether Proletarian or Financial Totalitarianism came out on top after the General Election in July, 1945. The one clear thing about it was that, if accepted, it meant death and damnation to private enterprise.

Early in 1945 there was considerable excitement in the Press about the treatment of poor children who had been removed from the clutches of their unnatural parents and had been boarded out by local authorities or had been sent to Remand Homes. If one considers British Air Transport as the unwanted, badly-bred child of the Air Ministry and the Ministry of Aircraft Production, which was to be boarded out with Boa and Boarail and Boaships, as one might call the unholy trinity of Public Corporations, one may get another aspect of this strange document.

Mr. Alexander B. Royce, Chairman of the Airlines Committee for U.S. Air Policy, said in February, 1945, that a single international U.S. airline would "disrupt the basic principle of regulated competition, which was established by the people through Congress in the Aeronautics Act of 1938."—That is exactly what this precious White Paper would have done if accepted.

The passages about propagating civil aviation, and the Boa Trinity being the ideal employers, and so forth, some-

how recall the kind of pious protestations with which characters in Dickens either lured their victims or covered their misdeeds.

I do not doubt the good intentions of the Government officials who drew up the paper, or of the Boas officials who supplied the material for it. They meant well, but the whole system was wrong.

For some curious reason the House of Lords, which generally talks more sense in a day than the House of Commons does in a week, seemed to be in favour of the proposals in the White Paper. But I was told at the time that some Noble Lords who might have criticised the scheme unfavourably were persuaded personally not to attack it, on the grounds that by doing so they would make the work of the Ministries concerned more difficult. And their Lordships are always so tender-hearted. Possibly officials are awakening to the fact that the more intelligent members of the public are learning that what is said in the House of Lords is more worthy of attention than is what is said in the Commons.

In the House of Commons the White Paper was supported heartily by representatives of the vested interests concerned—the railways and the shipping people. But it was attacked, not very bitterly but firmly, by several Members of Parliament who knew what they were talking about. And there will be much more criticism and much more debate probably for years to come before Air Transport is hogtied and hamstrung, to use a graphic expression from the U.S.A., as it would be if the provisions of this White Paper had become law.

After reading the paper word by word and making what sense I could of it, the idea struck me that perhaps after all it had been skilfully put together to be set up as a cock-shy, or Aunt Sally, for M.P.s of all parties to have a shot at it, and modify according to their likes and dislikes. In fact, it may have been composed in the mood of the Irishman who, when he came back from the fair was asked what he had got for his pig and replied, "Well, I didn't get what I expected. But then, I didn't think I would."

Here follows the White Paper, into which I have put notes because a running commentary seemed preferable to straining the reader's memory by referring back to specific points at the end of the paper.

BRITISH AIR TRANSPORT

The General Principles applicable to British Air Transport...

In this Paper His Majesty's Government present their general policy for the development of British civil air transport and the operation of air routes for the carriage of passengers, freight and mails.

2. In determining policy the field of civil aviation must be viewed as a whole and a plan, to be effective and practical, must cover all routes in which the United Kingdom is interested—Commonwealth, foreign and internal.

3. The United Kingdom policy on air transport in the international sphere, as set out in the White Paper on "International Air Transport" (Cmd. 6561) and elaborated in the United Kingdom proposals made at Chicago, was based upon the fundamental principle of order in the air, i.e.—the full and fair development of air services to meet all requirements coupled with the elimination of wasteful and subsidised competition. So, too, our national policy, while it must stimulate and encourage development and initiative, should do so within an ordered plan.

4. Civil aviation is essentially a transport business. Its problems are in many ways analogous to those of transport by land and by sea. To make our national air services effective, we must not only draw upon the best of aviation knowledge and skill at our command, but must also make the fullest use of the ripe experience and world-wide organisation which has been built up over many years by British enterprise and initiative in other forms of transport. This does not mean that His Majesty's Government regard any industry or undertaking as having a vested right to share in civil air transport. The test which has been applied in evolving the plan set out in this Paper is: Where can the best contribution to British air transport be obtained, and how can it most effectively be used to build up an organisation which will fulfil our public, commercial, and social needs?

5. It is fully recognised, not only by His Majesty's Government but also by those who are concerned in existing methods of transport by land and by sea, that the competition of air services must be met in the air. Our national and

Commonwealth interests—and, indeed, the interests of the older forms of transport themselves—cannot be served by attempting to retard or restrict new methods of carriage. They can best be promoted by creating and fostering the most effective air transport system we can develop at home and overseas.

6. Air transport is a service in which the community as a whole has a direct interest. The criterion as to whether a particular route should be flown is not merely: Is it commercially profitable? There are services which are essential in the public interest, but which offer little or no prospect of a direct financial return. Unlimited competition in the air by private operators would mean that competing services would be concentrated on the remunerative routes; and that the taxpayer, while reaping no benefit from the more lucrative routes, would be compelled to support by subsidies those services which, although desirable for public or social reasons, would initially, at any rate, be run at a loss, and might, in some cases, never show a profit. On the other hand, if an air transport undertaking is assured of the exclusive right to operate a sufficient proportion of remunerative services and to develop these to the full, it can and should accept the obligation to run unremunerative services as part of its general transport system. It is, therefore, a necessary part of the Government's plan, that the undertakings which will be granted the right to run air services both within the United Kingdom and between the United Kingdom and other countries, shall possess such right on their allotted routes, to the exclusion of other United Kingdom air transport operators.

[This is the most important sentence in the whole document. A well managed taxi or charter concern ought to be able to run any bureaucratic line off its feet.]

7. While in the interests of order and economy, competition between United Kingdom operators on individual air routes must be eliminated, there remains a field of development which is open to and will, in the Government's view, be best served and stimulated by the entry of competing operators. Subject to the observance of the necessary safety and navigational requirements, it is not intended to restrict the operation of charter aircraft.

Requisites of an Air Transport Organisation.

8. In the view of His Majesty's Government, the following are the requisites of an efficient air transport organisation :

(a) The Units must be large enough to operate economically but not so large or widespread as to preclude effective supervision along every route.

(b) Each Unit must have an efficient organisation covering every area served by its air lines to handle passengers, freight and mail, together with first-class knowledge and experience of transportation and facilities for full co-operation with other forms of transport wherever this can promote air travel.

(c) Provision must be made for the economical use and maintenance of aircraft.

(d) The most effective arrangements must be made for the training of air crews and ground staff and for their welfare.

(e) There must be close co-operation between the users and the manufacturers in deciding the types of aircraft to be used.

(f) The organisation should be capable of providing training for the crews of Commonwealth or foreign countries, and should also be able to supply these countries, where required, with technical and operational help. (A)

[(A) This was an astonishing proposition. Apparently the Boa organisation was to start up a great air training school, not only to train its own crews, and crews for the other nations of the Commonwealth—just as if they were not capable of training their own—but it was also to train crews, presumably ground as well as air, for foreign countries. That is to say, it was to compete directly with private enterprise in this field as well as in mere Air Transport.

For some years before the war an excellent organisation called Air Service Training, Ltd., existed at Hamble, alongside Southampton Water. It was started by the Armstrong-Siddeley-Avro group, and thence passed to the Hawker-Siddeley combine. There are also other training organisations in the country, though not on such a big scale. These, apparently, were all to be pushed out by the Boa.]

9. *Size of Units.*—The Government are convinced that the policy of a single chosen instrument, whatever may have been its merits in the past, is unsuited to deal with the great expansion of the future. There must, therefore, be several air transport undertakings. A single entity, even if it could effectively include and use all the varied experience of aviation and transportation which it is necessary to bring in, would be too large and far-flung to fulfil the requirement of individual supervision of all the routes operated. Moreover, while as stated above, it is clearly desirable to eliminate wasteful competition between British operators on the same route, it is none the less desirable both *to avoid a sealed pattern of management and operation* and to encourage different managements to try out their own ideas. This would in no way prevent the constant pooling of experience and the Government's plan is designed to secure this. (B)

[(B) This pious proposition hardly agrees with the note (A), which seems to indicate that one of the most important aims of the organisation was to create and insist upon a sealed pattern of management and operation. Otherwise why have such a training school?

10. *Civil Aviation as a Transport Problem.*—Air transport can be greatly assisted and stimulated by co-operation with other systems of transport. To the solution of the problems which air transport poses British enterprises already engaged in other branches of the transport and travel business can, alike with the British Overseas Airways Corporation, bring a valuable contribution. Their extensive organisation and connections both in the United Kingdom and overseas can with great economy of management be used to serve air transport equally with land and sea transport. Through their co-operation, the fullest use can be made of through-bookings, interavailability of tickets between air and other forms of transport and the most convenient rail and sea connections on all parts of the air routes. It is therefore of the essence of the Government's plan that those interests concerned in transport by sea and by land should be brought into a real and effective partnership with the organisations which will be responsible for transport by air.

11. *Carriage of Mails by Air.*—The Government have a special interest in the carriage of mails by air. The Post-

master-General is considering, in consultation with the Minister for Civil Aviation and the undertakings which will operate the future British air services, the best and fullest use which can be made of those services for the carriage of air mail.

12. *Routes to be operated by Separate Units.*—Much consideration has been given to the number of air transport units which will be most effective at the present stage, and the routes which they should cover. The Government have decided that the most efficient organisation will be obtained by means of three main Air Transport Corporations which will be responsible for air services on the following routes :

(1) The Commonwealth air routes together with the trans-Atlantic service to the United States and the services to China and the Far East.

(2) European air routes and the internal services of the United Kingdom.

(3) The South American route.

13. It is obviously convenient that the same Corporation which will operate the air route from the United Kingdom to Canada, should also operate the Atlantic service to the United States. When conditions permit the inauguration of regular civil air services to China and other parts of the Far East, these will link naturally with the services to India and Australia, and it is desirable that they should be associated with the same Corporation. (C)

[(C) Precisely why the same Corporation should operate the Canada route and the route to the States is not at all obvious. If the White Paper had said that obviously Trans-Canada Airways, the State-owned National-Socialist line, should operate the North Atlantic route to Canada while B.O.A. operated the route to the United States, there might be some excuse for calling it obvious. The National-Socialist Canadian air line might even object to a semi-capitalistic concern such as the Boa Corporation poaching on its preserves. On the other hand, one might say that it would obviously be better that two separate companies, whether Limited or Public Corporations, should run parallel, one to Canada and one to the United States, so that each might profit by the experience and the competition of the other.

Furthermore, why should regular civil air services to China and other parts of the Far East be associated with the Boa Corporation? Qantas Empire Airways have at least as much right to operate—now Japan has been settled—from Singapore to China and to the Dutch East Indies as have the Boa. And remember that the Boa cannot get to Burma and the Malay States, now the Japanese have been knocked out, without the kind permission of Indian National Airways, which theoretically carried the mails, freights and passengers of Imperial Airways (unhappily deceased) across India by the curious subterfuge of chartering Imperial's own aircraft and crews to do the carrying for it. The history of that particular line arrangement is very amusing.]

14. The Government are satisfied that the arguments in favour of uniting internal services of the United Kingdom and services from the United Kingdom to Europe in a single Corporation are overwhelming. While the majority of Continental services will focus on London, connections will be required from the outset with other centres of population and industry in the United Kingdom; and, as air transport develops, services will run direct from some of these centres to the Continent. The same type of aircraft will be equally suitable for many of the European and internal services; and the economical use of such aircraft will be greatly increased if they can be drawn from a pool available for European and internal services in accordance with the fluctuating seasonal and other traffic demands on individual routes. (D)

[(D) If one admits that these arguments were "overwhelming" then one may as well admit that all forms of transport by rail, road and water should be united in a single Corporation. One might even go farther and say that one single Corporation should be given power to regulate the private lives and employment of all the inhabitants of the British Isles and the British Empire.—Which no doubt is what politicians of the Morrison type would like.]

15. The trunk route from the United Kingdom to South America presents a new field for British civil aviation. It is one which our long and close relations with the States of that Continent make it essential that we should enter. (E)

[(E) The difficulty here is that when our gallant allies of the United States have gained full control, financially and commercially, of South America, and the Good Neighbour has

swallowed all the Good Naboths, there may be considerable trouble about a Public Corporation backed by the British Government butting in on this latest application of the Monroe Doctrine by the United States. Free and independent Limited Companies might do a little buccaneering business with such South American and Central American dictatorships as have not become totally controlled by the U.S.A., but a Public Corporation which has the wholehearted backing of the British Government can hardly take to that form of sport. For instance, rum-running from the Bahamas to Florida by air during the Prohibition period was good fun, but it could hardly have been done by such a Corporation as Boa.]

The Structure of the Corporations.

16. *Commonwealth routes (including the Atlantic).*—The Commonwealth and Atlantic routes, together with the ultimate extensions to China and the Far East, will be assigned to the British Overseas Airways Corporation. This Corporation and their predecessor, Imperial Airways, have been responsible for the development and operation of these routes in the past. They are in close relations with the corresponding operators of other Commonwealth countries. They are therefore clearly the appropriate instrument for the operation and further development of these routes. On many of the routes, however, a valuable contribution can be made by British Shipping Lines with their well-established organisation and local connections, and their experience of the special transport requirements of particular areas served. It is therefore proposed that these Shipping Lines shall be afforded the opportunity of becoming associated with B.O.A.C. in the operation of those routes to which they can make a useful contribution; an association which is welcomed alike by B.O.A.C. and the Shipping Lines. (F)

[(F) Far be it from me to say that anything in the White Paper is untrue, but the impression which I got before this document was produced was that, whether the Government likes it or not, certain British shipping lines were determined to run Air Transport on their own. This paragraph leaves one in doubt whether the shipping lines intimidated Boa into letting them come in on the deal or whether Boa just stretched out and swallowed the shipping lines, as it has swallowed all its other component parts. Either way, evidently Boa acted in self-defence, feeling that if the big shipping lines really got up

against it their vast experience of handling passengers and goods would knock a big hole in Boa business: The astonishing thing is that the shipping lines should, at their own risks, have taken a share in the capital knowing all the time that the managerial interest of Boa will predominate, and that they cannot get their money out.]

It will probably be convenient, in any case, for B.O.A.C. to operate certain of these routes through subsidiary companies; and as the interest and organisation of the different Shipping Lines is confined to particular routes, such a structure will clearly be desirable for those services in which British Shipping Lines participate. In any subsidiary companies, the predominant financial and managerial interest will normally be held by B.O.A.C.; but the Shipping Lines will, *at their own risk, take a share in the capital*, and their transport experience and commercial acumen will be represented on the boards. It is the determination of all the Shipping Lines which have expressed a desire to participate, as it is of His Majesty's Government, that the air routes with which they are to be associated shall be fully and successfully developed.

17. *European and Internal Routes.*—An agreed schedule of European and Internal United Kingdom routes will be assigned to a new company in which the participants will be the Railway Companies, the Short Sea Shipping Lines, Travel Agencies and B.O.A.C. and such other pre-war operators as desire to participate. In the first four groups is concentrated a great wealth of British knowledge and experience of aviation, transport and travel problems. In addition to their knowledge of United Kingdom and European traffic needs and their extensive organisation here and on the Continent, the Railways and their associated air companies have, in the past, successfully operated the great majority of the internal air services of the United Kingdom. The Short Sea Shipping Lines operate and have built up a valuable organisation and goodwill in connection with sea routes to Europe; some of them have also been associated with the operation of air lines in the past. The Travel Agencies combine a peculiar knowledge of the needs of the travelling and touring public with a wide organisation in this country and throughout the Continent. *All the proposed participants are agreed on the importance of B.O.A.C. having its share in this Corporation.* (G) It will bring to it

all its knowledge of aviation and its experience of the continental air-routes which its predecessors operated before the war.

[(G) Here again we have a strange state of affairs, or it would be strange if we did not know that already the railways had a stranglehold on internal and Continental Air Transport.

This is merely an exhibition of one large snake swallowing another, plus the added entertainment value that the swallowed snake is allowed to have a bit of himself sticking out so that he can wag his own tail.]

18. Although the great majority of European and internal air services were previously operated by B.O.A.C., the Railway Companies or the Short Sea Shipping Lines, there was a small number of independent British operators who ran air lines before the war. All but one of these have been compelled to cease operating during the war, but the Government considered it fair to afford them *an opportunity of taking up shares in the new company* on the same terms as the other participants. In certain cases these operators have acquired a knowledge and experience of particular local internal routes to be included in the agreed schedule, upon which it may be in the public interest to draw. Where the Government is satisfied that this is desirable, the possibility of forming companies subsidiary to the main Corporation to operate these routes, will not be excluded. In such a case the pre-war operator will be *afforded an opportunity of participating in the capital of the subsidiary company instead of or in addition to taking up shares in the new Corporation.* (H)

[(H) This is perhaps the most grimly humorous clause in the whole affair. Any small independent British air operator, who was squeezed out of business because of the war, is now graciously allowed to take up shares in Boarail, but not in Boa itself, remember. He is also allowed to put money into a new subsidiary company which may perhaps operate on the route which he himself operated before the war. But in neither case is he to have any voice in the management nor is he to take part in the operations.

In other words, having lost all his money in a venture which was doing well until the war began, he is now offered two new ways of losing money if, by chance, Boa itself or Boarail fails to make good—which is always a possibility.]

19. As stated in paragraph 6 it is an essential part of the Government's plan that the new Corporation shall be responsible for all the British air services on the scheduled routes. Its right to run on these routes within the United Kingdom will be exclusive. Its services to Europe will be run in parallel or, it is hoped, in some cases in conjunction with the services of other European countries to the United Kingdom. These exclusive rights are clearly necessary to give economical operation and the running of a maximum number of air services. The plan will, therefore, provide for the Corporation to run some services, both in the United Kingdom and in Europe, which will initially be run at a loss and some of which may never show a profit. Services of this kind are necessary in the public interest and a comprehensive schedule of services will be settled which will serve the public interest as well as fulfilling purely commercial traffic needs.

20. By bringing into the Corporation those interests which are concerned with land and sea travel in the United Kingdom and to Europe, arrangements will be made for inter-availability of tickets for the different forms of travel on all stages of the routes, for *the use of the existing offices and agencies of the various participants* both at home and abroad, and for the most convenient adjustment of times and frequencies of services in the interest of air travellers to facilitate through connections with other forms of transport. (I)

[(I) Here you will note a not particularly subtle or ingenious method of blocking bookings for charter air services. The railways played the same trick before the war when local booking offices, such as many newspaper shops and tobacconists ran in provincial towns, were barred from booking journeys on air lines, and road transport lines too, which were in competition with those owned or controlled by the railways.]

21. The European and internal air routes are likely to be more lucrative than some of the Commonwealth routes which are to be assigned to B.O.A.C. as the direct operating Corporation. The Government therefore think it right that the financial interest of B.O.A.C. in the new Corporation which will operate the European and internal air routes should be assessed in the light of this consideration as well as of the

technical contribution which it can make to the new Corporation. While it is not proposed that B.O.A.C. should have a majority holding in the new Corporation, it is intended that its interest should be substantial.

22. *South American Route.*—The South American route will be assigned to a new company in which the majority participants will be those British Shipping Lines operating to South America who have associated together for this purpose as British Latin American Airlines Limited. Here again it is proposed that B.O.A.C. should participate in the capital and management of the new Corporation, *but its share in the capital will be smaller than that which it will receive in the Corporation responsible for the European and internal services.* (J) The British Shipping Lines which have for so many years carried a large proportion of the passengers and trade between Europe and South America and have their wide connections and organisation and their goodwill in the areas to be served by the new air route are, in the view of His Majesty's Government, in the best position to make the service a success. They have expressed their willingness to risk their own capital in operating the route without subsidy.

[(J) In this instance B.O.A. seems to be showing some distrust of the future of the South American air services, so it skilfully contrives that the shipping lines, who have been so insistent in butting in on the Air Transport business, shall carry most of the baby. But if the shipping companies, on their own, make a success of the job, then Boa shares their profits.]

23. *Transfer of Shares in the Air Transport Corporations.*—The transport and travel organisations which have been invited by the Government to participate in the new plan, have been selected by reason of the positive contribution which they can make in skill and experience to the new Corporations. That they are prepared to invest their own money without any Government guarantee is an indication of their belief in the future of civil air transport and an earnest of their intention to operate efficiently; but they have not been invited merely as investors. They will take a permanent stake in the enterprise; and the Government has accordingly laid it down that *there shall be no transfer of the shares* in the capital of the new companies which are allotted to the participants. (K) This will

apply not only to the two new main air transport Corporations but also to the subsidiary companies which may be formed by B.O.A.C. to operate specific Commonwealth or Atlantic routes in which Shipping Lines may participate, and to any other subsidiary companies which may be formed by the other main air transport Corporations to operate particular services, such as those to the Channel Islands or the Isle of Man, where constitutional or other considerations make the formation of subsidiary companies desirable.

[(K) The idea that the small operators who were dispossessed by the outbreak of war, and the big shipping companies, shall put their money into the Boa combine, sink or swim, heads or tails, and shall never be able to get it out, seems to me an unusual form of finance.]

24. *Payment for Goodwill.*—His Majesty's Government do not regard anyone as having a vested interest in the air. Although the new air transport Corporations *will be entitled to acquire at a fair valuation from existing air line operators any physical assets which are needed for the new services, the Government do not feel they would be justified in approving an allowance or issue of shares to participants in respect of goodwill or "development expenses" previously incurred.* (L) The whole of the capital of the new Corporations and their subsidiaries will thus be represented either by physical assets acquired or cash subscribed.

[(L) This, of course, is quite in accord with National-Socialist finance as practised in relation to landowners, householders, farmers, shopkeepers, and others whose possessions have been requisitioned or whose businesses have been shut down in the need for running the war. I am merely surprised that the White Paper did not suggest that when a former aircraft operator's business had been killed he should be required to pay Death Duty to the Government on it.]

Co-operation between the three Air Transport Corporations.

25. *Overhaul of Aircraft.*—In order to ensure the maximum of efficiency and economy, the three Air Transport Corporations will join in the creation and management of a combined organisation for the overhaul of aircraft.

26. *Training of Air Crews and Ground Staff.*—The highest standards of skill and reliability must be achieved for

air crews and ground staff. For this purpose the three Corporations will maintain a combined training establishment at which their flying and technical staffs will be trained, and at which refresher courses will be available.

27. *Recruitment of Staff.*—The constituent elements of the three Corporations have expressed their keen desire that every possible opportunity shall be given to officers and men of the Royal Air Force to take service with the Corporations. Close relations will be maintained with the Air Council, through the Minister of Civil Aviation, in order to give full effect to this intention. It will, however, be appreciated that openings for employment in civil air transport will not be large compared with the war-time strength of the Royal Air Force.

28. *Welfare of Staff.*—His Majesty's Government will also make it a condition that the terms of service of these Corporations shall be those of a "model employer"; and in particular that special provision shall be made for pilots and other members of air crews in the event of death or disablement while engaged on flying duties, and for the granting of superannuation allowances to those classes for whom suitably paid ground employment cannot be provided when they are past flying age. The participants in the Corporations have expressed their ready assent to this condition. A scheme of this kind which was settled in agreement with the appropriate employees' Unions, is already in operation in the case of B.O.A.C.

29. *Relation of Minister for Civil Aviation to the Air Transport Corporations.*—The appointment of members of the British Overseas Airways Corporation *will be vested in the Minister for Civil Aviation*; and he will also approve the appointment of the representatives of B.O.A.C. on the Boards of the other two main operating companies. The appointments of Directors upon the Boards of the other two main operating companies *will be subject to approval by the Minister*, as will the representatives of the Shipping Lines upon the Boards of the subsidiary companies of B.O.A.C. *The approval of the Minister will also be required to the Memorandum and Articles of Association of all the companies, both main and subsidiary, which play a part in the scheme.* (M)

[(M) In other words, the Minister for Civil Aviation, whoever he may be at the time, becomes the *Komplete Kommissar*. One might even call him an Absolute Tsar.]

30. Once the Corporations and subsidiary companies have been established and the members of their Boards appointed or approved by the Minister, as the case may be, it is a cardinal principle of the plan that the Corporations and the companies should be responsible for the operation and management of the air services under their control. While management must vest in the Corporations and companies, the Minister must have a general control over broad aviation policy. Thus all companies must conform to the policy laid down by International Convention or by bilateral or multilateral agreements entered into with other States by His Majesty's Government. Further, it is part of the plan that the Corporations shall operate, either directly or through their approved subsidiaries, all the air routes which are assigned to them. As stated above, an agreed schedule of routes so assigned to each of the Corporations will be settled. These routes the Corporations will undertake to operate. *They will not have the power to cease operation* (N) on any scheduled route without the consent of the Minister; but such consent will not be unreasonably withheld if events should prove that one or other of the agreed routes is neither commercially practicable nor required for the public interest.

[(N) This is about the most comic phrase in the whole paper. The idea that a firm which finds that it is operating a certain air route at a loss shall not have the power to cease operations is genuinely funny. It is about equivalent to issuing an order that a soldier who is bleeding to death from wounds shall not fall down. The assumption is that, if the Civil Aviation Kommissar insists that the route shall be run, the Government (His Majesty's or any other at the time) shall find a subsidy to keep it going, as a form of blood transfusion.]

Subsidies.

31 The general policy of His Majesty's Government is that both internal and external air services should operate as far as possible without subsidy.

32. *Internal Services.*—So far as internal services in the United Kingdom are concerned the participants in the Cor-

poration to which these routes will be assigned—and who are investing their own money therein—are willing to run without subsidy the agreed schedule of routes which will include, as well as the remunerative services, those routes which the Government regard as desirable in the public interest *although some of them, if they were dealt with in isolation, could not be run at a profit.* (O)

[(O) Here we have an example of the possibility of winning at roulette what one loses at chemin-de-fer, or what you make on the swings you lose on the roundabouts. But if you lose it all you still have not the power to cease operations. All you can do then is to go out and shoot yourself.]

33. *International Services.*—In the international field the Government have already declared that it is a cardinal aim of their policy to reduce wasteful competitive practices and, in particular, to control subsidies with the object of ultimately eliminating them altogether. To this end, they proposed in the White Paper on International Air Transport (Cmd. 5561) and later expounded at Chicago, their considered plan for avoiding uneconomic competition in international air services, by maintaining a broad equilibrium between transport capacity and traffic offering, a fair division of services between the national air lines engaged on international routes, and an agreement as to freight and passenger charges. His Majesty's Government had hoped to secure this by multilateral convention. This did not prove to be possible, but the broad principles laid down in the White Paper on International Air Transport remain the policy of His Majesty's Government. In any reciprocal arrangements which they make with foreign countries, the Government will stipulate for the reasonable application of these principles. In this way it is hoped that wasteful competition and subsidies may be largely eliminated upon the international routes in which Great Britain is interested. It is the intention that the agreed schedule of services on the European routes and the Latin American service should be operated without subsidy; provided always that services which the Government regard as essential to maintain are not faced with highly subsidised competition.

34. *Commonwealth Services.*—In the past the operation of certain of the Commonwealth routes has required a subsidy. These routes are so essential in the interests of Commonwealth

communications that His Majesty's Government will be prepared to afford the necessary financial help to enable B.O.A.C. to operate them.

New Routes.

35. It is intended that the agreed schedule of routes to be initially assigned to the three Corporations shall include all those upon which, in the view of His Majesty's Government, it is essential that United Kingdom Air Lines should be ready to operate as soon as war conditions and the necessary aircraft are available. In the future as air traffic develops, the need for new routes will emerge. It is not intended to make any present commitment as to the right to operate new routes. The Government consider that any new routes should be left open to whatever operator—whether one of the main Corporations or some entirely new operator—can establish that he is best fitted to run them.

36. *Power of the Government to require Corporations to operate new routes.*—The Government, however, may from time to time wish to have operated, either within the Commonwealth or outside it, a particular route which is not in the agreed schedule of services, and which is not the subject of any application to operate either by the Corporation or by a new operator. In such a case the Government would have power to require the appropriate Corporation to undertake services on that route; but if the Corporation satisfied the Government that such a service could not be run without loss, the Government must be prepared to give the Corporation such temporary financial assistance as may be reasonable.

Assurance of Reasonable Facilities.

37. In order to ensure that the interests of the users of air transport are adequately and continuously safeguarded, it is intended to confer upon an impartial Tribunal jurisdiction to consider complaints as to such matters as the absence of reasonable facilities, the granting of undue preference, and the reasonableness of rates and charges of United Kingdom air lines. Such Tribunal should have power to enforce compliance with its decisions. In the case of complaints relating to overseas services—which are necessarily regulated by inter-Governmental agreement—the decision of the Tribunal must be subject to confirmation by the Minister.

Co-operation with Commonwealth and Foreign Air Transport Operators.

38. The Commonwealth routes will be operated in full co-operation with other countries of the British Commonwealth. These routes have already been discussed with other Commonwealth Governments and with the Colonial Office as representing the Colonial Empire. The Commonwealth Government have expressed their desire that reciprocal services from their countries to the United Kingdom shall be operated in parallel with the United Kingdom services to their countries. In order to make this parallel system effective and economical, arrangements have been made as regards facilities at the terminals and along the routes. Provision will also be made for an equitable division of revenue and expenditure where it is agreed that a pooling arrangement is advantageous. Arrangements *for parallel operation* will not, of course, exclude—they should, on the contrary facilitate—the *ultimate conversion of parallel operation into joint operation* whenever and wherever the Governments concerned agree that this has become desirable. (P. 1)

39. His Majesty's Government will welcome the closest co-operation between foreign air line operators running services to the United Kingdom and the Air Transport Corporations set up under the Government plan. Here, too, while parallel operation will probably prevail in the initial phase, the possibility of running joint services through *subsidiary companies in which the foreign operator would participate*, is one which in the view of His Majesty's Government may present great advantages. (P. 2).

[(P. 1 and P. 2) The compilers of the White Paper might have done well to suggest who should confiscate what if war broke out between us and a foreign country which was operating in partnership with this precious subsidiary company.]

40. It is hoped that the combined training establishment for air crews and ground staff which will be set up in the United Kingdom, and possibly the joint organisation for the overhaul of aircraft may prove of use to other Commonwealth operators and to foreign operators who desire to avail themselves of the facilities offered by these organisations.

Provision of Aircraft.

41. It is, of course, the intention of His Majesty's Government, as it is the desire of the Corporations, that the Corporations shall use British aircraft as soon as they can be made available. The Ministry of Aircraft Production in collaboration with the Brabazon Committee, has already placed orders for a number of civil types. In war, when resources are strained and Service demands are paramount the Government must place the orders for aircraft for civil aviation because they must control and allocate the priority and distribution of all calls upon the resources of the aircraft industry. But there must be the closest collaboration between the Department responsible for placing the orders, the user and the producer, so as to ensure that the user gets the type of aircraft that suits the services he is to operate, and that the producer can apply to the needs of the user, the best and latest experience in technical development and in the ingenuity and initiative of design staffs. *Air line operators, no less than Air Forces, must have their eyes always on the future and not on the past, save in so far as the experience of the past may point the way to future progress. (Q. 1).* Arrangements have already been made to bring the new Air Transport Corporations into close collaboration of the kind with the manufacturers of aircraft and the Government Departments concerned. *As soon as circumstances permit the Corporations and their subsidiaries will be free to buy aircraft direct from the manufacturers. (Q. 2)*

[(Q. 1 and Q. 2) This sounds very nice and looks very nice, but what is the good of air-line operators having their eyes on the future when they cannot move hand or foot except by kind permission of the Civil Aviation Kommissar. And what hope is there of free trade in aircraft when all the technical arrangements of Boarail and Boashipping are directly under the thumb of whoever may be the Sub-Kommissar in charge of the Boa Technical Department?]

42. In the meantime it is the intention of the Government that in the initial stages where such a course is convenient, the Government shall lease the aircraft which they have ordered to the Air Transport Corporations. The Government will also be prepared, in appropriate cases, to consider leasing to other Commonwealth operators and to foreign operators.

43. In framing their air transport policy, the Government have sought to apply to the development and expansion of our own air services, those principles of ordered progress which they have advocated in the international sphere. They are planning to bring into operation as rapidly as the exigencies of war permit, a complete network of Commonwealth services in full co-operation with other Commonwealth Governments. They are bringing into partnership on practical business lines, those elements which, by reason of their experience and organisation, can contribute to the full and rapid development of British air transport. In this way the Government believe that they can best "meet the needs of the peoples of the world for safe, regular, efficient, and economical air transport," and enable British civil aviation, which has had to be subordinated to the supreme war effort, to take its rightful place on the airways of the world.

[That is the end of the White Paper.]

CHAPTER VI.—WHAT WE CAN DO WHEN WE TRY

A few days before this preposterous paper was published Mr. Churchill said, "Controls, under the pretext of war or its aftermath, which are, in fact, designed to favour the accomplishment of wayside totalitarian systems, however innocently designed, whatever guise they assume, whatever liveries they wear, whatever slogans they mouth, are a fraud which should be mercilessly exposed to the British public.

"We are determined that the native genius and spirit of adventure, of risk-taking in peace as in war, shall bear our fortunes forward, finding profitable work and profitable trade for our people."

The White Paper was diametrically opposed to every sentence of Mr. Churchill's phrases. It was, in fact, the embodiment of the wayside totalitarian systems to which he refers so scornfully.

If ever the BoA achieved the absolute control which the White Paper would have given it, all air line pilots, air crews, air engineers and aircraft mechanics would wear the livery

of this Airwayside Totalitarian System, and, most important, if any one of them got the sack he would have nowhere else to go. There would certainly be no air line which he could join, but the White Paper did not say anything about charter services. That was rather a curious omission.

At any rate, as none of the Boa Corporations can be attacked by shareholders at Annual General Meetings, and as nobody can get at them by questions in the House, because they are not directly controlled by the Civil Air Ministry, the only influence which can be brought to bear on them is that of a strike of the employees.

There exist to-day two organisations open to employees of Air Transport concerns. One is the Guild of Air Pilots and Air Navigators of the British Empire, which apes the manners and customs of the great City companies and aspires to be, in the air, something like the Company of Master Mariners, to which, incidentally, Air Chief Marshal Sir Frederick Bowhill, formerly A.O.C.-in-C. Coastal, and later Air Transport, Command, R.A.F., was elected Grand Master in March, 1945. The other organisation is the British Air Line Pilots' Association, which is frankly a Trade Union. I assume that all ground engineers and mechanics employed by the Boa Trinity will become members in good standing of the Amalgamated Engineering Union. Air lines cannot run without pilots, and aircraft cannot fly without engineers, and the B.A.L.P.A. will no doubt amalgamate itself in due course with the Trade Unions under the Trade Union Council. And thus the Trade Unions will control British Air Transport more effectively than can the Civil Air Kommissar-Minister.

Thus, instead of making the Boa Trinity immune to attack by shareholders or M.P.s whose attacks might have been gentle and helpful, British Air Transport will be entirely in the hands of the T.U.C. Which, after all, may be a very good thing, because at any rate Labour does know what it wants and means to get, whereas the Conservatives and the Liberals and the Pink Wets do not seem to have the haziest idea about how to get the great solid mass of the British people, especially the English people, on their side. On this point I recommend the study of Mr. Koestler's "The Yogi and the Commissar." It is an intellectual riot.

There are, fortunately, several sides to Civil Aviation, and to Civil Air Transport, which is not quite the same thing, besides the Boa organisation. Nothing was said in the White Paper about charter services. As I have mentioned earlier, the Boa Trinity controls, directly or indirectly, practically all the booking agencies in the country, so far as transport by air, water or land is concerned. Therefore any charter service which shows any signs of competing with the regular air lines will surely be banned by the Boa. But an enterprising and intelligent charter service ought to be able to arrange booking agents of its own. It will find itself in the same position as a motor-coach proprietor or a hackney carriage proprietor who has a licence to let his vehicles for transport but cannot get a licence, generally because of railway or bus company opposition, to "ply for hire or reward."

There were, before the war, quite well-to-do luxury coach firms which were not allowed to run regular bus lines, either over short or long distances, because they would have been competing with that precious monopoly, the L.P.T.B., which seems to work on the principle that London passengers exist for the entertainment of the London Passenger Transport Board instead of the Transport Board existing for the convenience of London passengers. Also such motor-coach lines are not allowed to compete with any lines run by the railways or in which the railways have a large interest, as for example, in Scottish Motor Transport, which operates practically all over Scotland, and I believe a number of other motor-bus networks in country districts.

There seems to be every reason why a well-equipped, well-managed, and well-financed Scottish Air Transport firm, for example, should be able to charter aircraft to fly to Canada or to the United States at irregular intervals, depending entirely on the number of passengers which they could book. As they would not be running to schedule they would not be an air line, but by strict attention to business and by giving service to air passengers, they might very well run more charter machines at short intervals to and from the American Continent than would be run by the regular scheduled air lines.

Similarly, a firm which had been pushed out of business by Boarail, such as North-Eastern Airways, might start a charter business to all parts of Europe, that is, naturally, when

some parts of Europe have been so far rebuilt as to justify running a charter service to them.

I feel sure that, if and when any such charter service has been built up to such a stage that its cargoes of freight and passengers begin to compete with Boa or Boarail, efforts will be made to squash them, or freeze them out, as John Sword was frozen out of his gallant effort to develop Air Transport in Scotland on pain of being pushed out of his directorship in Scottish Motor Transport, Ltd.

This phase of our Civil War in the Air will be most interesting to watch. The rebellion against Boa may be squashed at once, or it may drag on for years. Or possibly it may die suddenly when we cease to pretend that we are a free country and reconcile ourselves to complete Totalitarianism.

Personally, I do not care one way or the other. I have never been a capitalist, and I am never likely to be, but I should like the English people and their Celtic fringe to make up their minds whether they are going to be a Totalitarian State in the future and live under a complete system of National-Socialism, or whether they are going to be a free country and depend for future progress on individual effort. All this shilly-shallying between the two becomes a bore. And it prevents people from making a whole-hearted effort either way to put British Air Transport where it belongs—that is in front of the rest of the world.

Nobody in the British Commonwealth of Nations, or outside it, need have any doubt that, properly run, we can do better in Air Transport than any other nation. Right through the war the best British aircraft in each category, from the fastest fighter to the biggest bomber, was always better than the best in the same category belonging to any other nation, whether enemy or allied. And coming on towards the end of the war, when people were thinking about building transport craft and were turning bombers into passenger machines, by way of turning swords into ploughshares, we had some interesting comparisons. The stories are worth telling in themselves.

Lots of Liberators, which seem to be the best bombers designed and built in the United States, were turned into transport machines, both by U.S. Army Air Transport Command and by our own people for R.A.F. Air Transport Command

and for the Boa. And they did very good work. They were used, for example, regularly on that terrific long non-stop stretch from Colombo in Ceylon to Wyndham in West Australia. The course brought the line directly over the Cocos Island, but that island was never used as a stopping place because it was so near the Netherlands East Indies, occupied by the Japanese, that any kind of an Air Transport installation there would have been raided by Japanese task forces. The island was always there as an emergency landing place, but I have never heard of anybody landing on it.

Anyhow, Liberators were put onto the job because they were the only machines which had any worth-while internal capacity and a long enough range.

During 1944, A. V. Roe & Co., Ltd., which meant Mr. Roy Dobson (now Sir Roy) and Mr. Roy Chadwick, their chief designer, designed a square box-car fuselage, or body, to take the place of the tubular fuselage of the famous Lancaster bomber. Some people laughed at this box-car, but as it had no gun turrets sticking out and had a reasonable shape at the tail, it turned out in practice to be just as fast as the Lancaster bomber, and it had an enormous cubic capacity inside. It was not quite wide enough to be an economical passenger craft, because one could not put four people side by side with a gangway between each pair. That meant that it had to have two people on one side and one on the other with a needlessly wide gangway. But its capacity as a cargo carrier was terrific. And several of them were fitted up as luxury passenger craft for Very Important People, or V.I.P.s, as they are known in Air Transport.

Early in 1945 one of these machines was sent to Australia just to show the National-Socialist air-line people there that we could still build decent transport craft in England. Then it was sent on to Ceylon.

It was sitting on the West Australian aerodrome one afternoon ready to start next morning, with its engine covers on and all bedded down for the night, when the skipper of a Liberator which was also going to Ceylon came along and asked what time the York intended to start. The skipper of the York said that he was going about 9 o'clock in the morning. The next morning, very early, he and his crew were awakened by the sound of the engines of the Liberator running

up, and soon afterwards taking off. They did not worry themselves. They went and had breakfast, and duly started some hours behind the Liberator. They did not see it on the voyage, and they did not hear it because radio silence had been commanded all along that route, because of the Japanese. When they arrived at Colombo they asked when the Liberator had got in, and were told that it had *not* got in.

The York skipper had a bright idea. He parked the machine in the usual place for visitors, had the engine covers put on, bedded it all down for the night, and he and his crew cleared out. An hour or two later in came the Liberator. The skipper and crew were astonished to see a York sitting on the aerodrome, and thought at first that Boa had two Yorks on the line, one at each end. Then they looked at the lettering, and saw to their amazement that it was the same York on which they had stolen a march that morning and had left behind in Australia. And I am told that they went to bed feeling remarkably small.

Another story illustrates the way in which anti-English propaganda gets about. The story, as I heard it, was that certain Directors of A. V. Roe & Co., Ltd., went to Canada in a York to talk about building Lancasters and Yorks there, and demonstrate it. They had arranged, on their way back, to bring with them a very senior officer of the R.A.F., who was in the United States.

When the time came to start back the R.A.F. officer was delayed, and they said that they could not wait for him and took off from Montreal, to Goose Bay, the new take-off airfield in The Labrador. There they were held up because the York was not fitted with de-icers, so the R.A.F. officer, who had arrived in Canada from the States soon after they left, crossed in a Liberator and was in England while they were still waiting in The Labrador.

The true story was this. They were held up first in Canada because the senior officer of R.A.F. Transport Command on the spot would not give them leave to go. They were then held up for about two days at Goose Bay by impossible weather, during which no aircraft took off. When the weather was good enough to go a Liberator took off four hours in front of them. They followed, not being in a violent hurry then, and listened to the Liberator talking on the radio most of the

way across. And they landed at Prestwick one hour and a half behind the Liberator, after picking up two hours and a half on it during the journey.

The R.A.F. officer who figured in the original hostile story, was still in the United States when the Avro Directors landed at Prestwick.

There is a good story about a York, either that same craft or another, which was to be taken to Canada and the United States for demonstration by a famous U.S. pilot who had become converted to British aircraft. Before crossing the Atlantic from east to west he wanted to do a full-length consumption test to see just what fuel and oil the engines on this particular craft were using. He said that he wanted to do a long test.

The next morning he started off with an Avro flight-engineer on board to keep tab on all the readings. They took off in the early morning, and they did not come back till the late afternoon. When they landed somebody asked the flight-engineer where they had been. He said that he did not know, because he was watching his gauges and not the maps, but he knew that they had flown north over a lot of sea, and that as they were turning round to come home the pilot had pointed to a town below and had said, "Reikjavik." When you come to think of it, Manchester to Iceland and back non-stop just for a consumption and engine test is pretty good going.

There is still another story which is worth telling. Another York was rigged up for the special use of Field-Marshal Sir Jan Smuts, Prime Minister of South Africa, C.-in-C. South African Forces and all the rest of it—one of the world's few statesmen of to-day. His personal pilot, a Colonel in the South African Air Force, spent a considerable time at the Avro works watching the machine being got ready. When he had done its preliminary test flights he said that he would like to take it on a really good trip to make sure that everything was right before handing it over to the owner.

So he started off one morning, and he did not come back for a week or more. The Avro people did not worry because they knew that if anything had gone wrong they would hear about it quickly enough. And, sure enough, the Colonel turned up, very pleased with the aeroplane and its engines, and

with the box-car hull full of luxuries from South Africa, the like of which had not been seen in Manchester for years.

Just as a parting shot at those who are inclined to look with scorn on British Air Transport craft, let me remind them that in November, 1944, a Mosquito belonging to Boa flew from England to India in 14 hours. Also a Sunderland flying-boat soon afterwards flew from England to India, with three stops in 30 hours. A Lancastrian (that is a Lancaster without gun turrets) took the first through air mail to Australia in less than 70 hours in June, 1945,. And a York which was specially fitted out for His Royal Highness the Duke of Gloucester, Governor-General of Australia, flew from England to Australia in four hops, England to Cairo, Cairo to Karachi, Karachi to Colombo (Ceylon), and Colombo to West Australia. The latest, at the time of writing, was the flight by four Mosquitos from England to Karachi in less than 13 hours. The fastest of them took $12\frac{1}{2}$ hours.

Those are the performances of standard type, war-produced British aircraft, and they all beat anything that has been done by any aircraft designed and built in any other country, in the same category, that is, high-speed mail machines, high-speed land-plane transport, and high-speed flying boat. And remember, that they are only stopgaps and makeshifts, so far as Civil Air Transport is concerned.

Thanks to complete peace internally, without any black-outs or bombing or anything to interrupt design and production, other than a slight overdose of strikes, the aircraft designers and producers in the United States have had a long start on us in designing the biggest class of Air Transport craft. The Brabazon I, which is being built by the Bristol Aeroplane Co., Ltd., will not be flying until 1947, so far as I can see, but the Avro Tudor I and Tudor II, which were only put in hand towards the end of 1944 as against U.S. passenger aircraft designed for that purpose and nothing else, which were started in 1943, were already flying in the middle of 1945 and should be used in considerable numbers in 1946. There is also the Handley Page Hermes, and sundry other types which may or may not be out in 1946. And there is no need to doubt whether any of them will be as good as other Civil Air Transport craft built in other countries in the same class.

I have said nothing in this book about the development of private flying, because it is concerned altogether with Air Transport. How private flying, if anybody can afford to keep a private aeroplane, is to be regulated is a grand subject for debate. Let me say again that if the air is to be free, if the kind of chap who, before the war, drove a sports-car on the road during the week, and if the dull clot (to use a popular word of the moment) who used to drive a "tiddler" car during the week-ends, are to be allowed to get into the sky in fast sports planes and slow family planes, then Heaven help the Air Transport machines. Telling them that they must keep away from traffic lanes and from air line and air charter aerodromes will probably have little effect until a good few of them have been killed in collisions. Such orders have had little effect on pilots of air-transport craft during the war, judging by the accidents.

The shocking numbers of deaths on our roads during the war, when the amount of traffic has been so heavily reduced, shows how little effect air accidents are likely to have on incompetent or reckless pilots. So good reasons could be produced by keeping them out of the sky altogether.

On the other hand, by the time Income Tax has gone up to 15s. in the £, with Super-Tax on all incomes over £100 per annum, there will be little chance of anybody having enough money with which to run a private aeroplane. There is a possibility that big industrial concerns, either Government-owned in a Totalitarian State or Co-operative Societies under a sort of National-Socialism, may keep private aeroplanes with which to convey their officials from one place to another. And either the industrial concerns or the Government may allow privileged servants who have been pilots to borrow aircraft and fly themselves. Also they may dish out free trips by air as a reward to worthy servants of Public Corporations, much as the Germans used to take people for free trips in luxury liners under their "Health Through Joy" Movement, or as the Russians used to send their workers in the State factories to the Crimea for their holidays or for treatment when worn out.

But in any case, whatever form Air Transport may take, we may be sure that we shall be at the top.

CHAPTER VII.—A PROBLEM AND A PROGRAMME

According to the laws of nature as manifest in war-time, and provided that His Majesty's Government does not make over to His Majesty's Stationery Office all papers, printing, binding, publishing, setting, composing, proof-reading, and all the other arts and pastimes of book production, so that the public may be flooded with pretty picture books about the war, or deluged with registers concerning the this-year-next-year General Election, this book ought to appear somewhere before the end of 1945.

It does not set up to be a standard work of reference. Its critics will call it ephemeral journalism. I prefer to look on it as a series of essays on subjects which are vital to the future of Air Transport. And having, for my sins, been brought up in Ireland, I therefore put this Preface at the end, so that readers who have got so far may put down the book with a general idea of the problems before those who will have to build up the Air Transport of the world after the immediate fighting is over.

I do not presume to lay down a programme for the World's Air Transport, but, at any rate, I can pass along a few suggestions for building what we might call, metaphorically, Air Transport House. One of the cheapest jibes to throw at a critic of things as they are is that he is destructive. So let me point out that if one is to build a satisfactory house on an old foundation one must first of all destroy the old house, or nearly all of it—as our bomb repair squads and their bosses have discovered. Moreover, one cannot build a house without dropping bricks.

Probably in building the World's Air Transport House of the future enough bricks will be dropped to sink a fleet of air liners or to build a runway long enough to please the most modern and unimaginative aircraft designer or aircraft operator. You may object that runways are not made of bricks but of concrete. In fact, some of the best runways in other parts of the world have been made of bricks. And, anyhow, we are discussing this question in the abstract not in the concrete.

Naturally, the success of the World's Air Transport of the future depends on peace on earth and men of goodwill—which is the proper phrase. Goodwill towards men is no use

unless you have men of goodwill. And, taking them all round, those who have built up the great air lines of the past have been a trifle ruthless in their methods, or they may have stretched the subtleties of the law to their utmost in achieving their ends, and they may have done an occasional bit of claim-jumping. But every one of them has had as his first article of faith the development of Air Transport, and, ranking with but after his first, the determination that his own country and his own air lines shall surpass all others.

Let us just glance at the five greatest air lines which were running at the beginning of the war. The British Imperial Airways, in which, for this purpose, is included Qantas Empire Airways; the Dutch Koninklijke Luchtvaart Maatschappij, or K.L.M., to the East Indies; Air France, at least that part of it which was a successor of the Aéropostale line to the most south of South America; the German Luft Hansa, with all its network as well as its South American extensions; and, alphabetically last, but a long way from the least, Pan-American Airways, circumaviating the whole of South America, stretching out across the Pacific to China and south-westward to New Zealand and Australia, under young Mr. Juan Trippe.

They are all so typical of their countries. Allowing that he had, on the whole, an intelligent Board of Directors to back him, George Woods Humphery was the man who built Imperial Airways, and one may rightly rank with him, I doubt whether one should even say after him, Hudson Fysh, who started the Qantas Company in Australia in 1919, long before anybody thought of Imperial Airways, and has been the motive power of the Australian half of the line ever since it got through to Australia in 1933. Woods Humphery ploughed along to the East in a good, solid English (not British) way, encumbered by all sorts of laws and regulations and Government departments. The way he got the line across India to Singapore is a whole story in itself, what with the obstruction of Indian Nationalism and the difficulties of the climate and all the rest. Getting down to Cape Town was just as bad, because he had to wrestle with the African jungle and South African obstinacy as well. And on both lines he had to deal with the variations of the assorted Mediterranean temperaments.

Hudson Fysh, on the other hand, went at the other end of the line in that methodical yet lighthearted way in which

the Australians get things done. I have always admired the aphorism which an Australian friend of mine once told me was the Australian national motto, "Get up every morning with a clear conscience, look every man straight in the eye, and tell him to go to Hell." I do not apply that exactly to Hudson Fysh, but it certainly applies in spots.

Then take the K.L.M. Albert Plesman built up the line to the Netherlands East Indies with that stolid Dutch determination which has been the characteristic of the Netherlands ever since that little patch of boggy country became a nation, and grew to be one of the world's greatest Colonial Powers. Presumably because Holland itself is a small country Plesman seemed to have less difficulty on the diplomatic side in dealing with all the foreign countries over which his line had to pass than had Imperial Airways.

To take one little example, K.L.M. managed to run along the north coast of the Persian Gulf, without interruption, to the east, at a time when our great Imperial Airways had great difficulty in getting permission to alight on Persian territory or Persian territorial waters. I think that one of the most pathetic and humiliating pictures in the history of Air Transport was that which showed our Under-Secretary of State for Air, Sir Phillip Sassoon, and an Imperial Airways aircraft, being held up on a Persian aerodrome, under guard of half a dozen bare-footed, ragged, verminous Persian soldiers. The idea of such a thing was enough to make our gracious Queen Victoria turn in her grave—especially when you think that a certain Major Outram, two or three years before the Indian Mutiny, had defeated the whole Persian army with one battalion of Sepoys—Indian native troops. Shades of Xerxes!

And Plesman got K.L.M. across India without any trouble from the Indian Government; presumably because he negotiated as an independent European Power, whereas Imperial Airways bumped up against the rights of a Dominion to bar the progress of the Mother country. To anybody who wants to get something like a true idea of India I recommend "Verdict on India," by Mr. Beverley Nichols. It describes accurately the India which I have known for 50 years through friends in the Indian Army, Police, Civil Service, and in trade all over the sub-continent. And it is the first book on India, barring "Mother India" and a few published privately, to

N

cut loose from the awful bondage of "appeasement," which has been the curse of this country for twenty years or more.

So far as British possessions were concerned, Plesman had rather a pull over us because we needed the permission of the Netherlands Government to fly over the Netherlands Indies to and from Australia, so we could hardly raise any objection to K.L.M. flying over our territory. The fact that K.L.M. got to the Netherlands East Indies in several days less time than did Imperial Airways was a continual source of annoyance and argument. But they did get there and back, and a lot of loyal British subjects in the East travelled by K.L.M. because it was so much quicker. But to discuss all that is a matter of air-line history outside the size and scope of this book.

Then comes the development of the French air lines. It is that odd mixture of heroism and hysteria which is so typically French. In one of his books, Mark Twain refers to a happening abroad as taking place in "a furious state of French calm." That, I may add for the benefit of those who have never heard of the great U.S. humorist, Mark Twain, was before the coming of appeasement, since when everybody, except the Russians, has had to be grovellingly polite to everybody else.

The story of the energy and enterprise and grim determination of M. Latécoère, of Toulouse, and of his staff and his pilots as they built up the great Aéropostale line to Dakar, how they sent the mails across to Port Natal in Brazil in fast, cranky, dangerous and hideously uncomfortable little steamboats, called *vedettes*, or scouts, bought from the French Navy, and how they took the mails down south to Argentina and over the Andes to Chile, and north over the Amazon forests to French Guiana, is pure fantastic heroism. On the other hand, the early Franco-Roumaine line very nearly approaches farce. And when all the French lines had been Nationally-Socialised into Air France, and their great national line was extended across India (again without opposition from the Indian Congress people) out to Indo-China, there is a fine tale of that curiously feminine tenacity of purpose which is so French.

Luft Hansa, on the other hand, is an example of German thoroughness. In digging up the history of the world's air lines I found that as early as 1924, although the Germans were

forbidden to make any aero-engine of more than 200 h.p., and, incidentally, were forbidden to put more than one of them in an aeroplane, there were German-run, and largely German-owned air lines practically all over the world. These are to-day, for propagandist purposes, generally supposed to have been part of a vast German plot to dominate Air Transport. But, in fact, most of them were private enterprises by little groups of demobilised German war pilots and ground crews.

Most of them were equipped rather than financed—"grub-staked," as the U.S.A. people say—by the Junkers Company, which was then still chiefly controlled by that great engineer and pacifist, Professor Junkers, who regarded Air Transport as one of the greatest means of bringing the peoples of the world together, of teaching each the peculiarities of the others, and of bringing them together in fraternal love and harmony. The dear old Professor forgot, if he ever recognised the fact, that the average man hates his next-door neighbour, or the people in the flat above or below, particularly above, far worse than he hates the man at the other end of the street. That is a piece of human philosophy which has been sadly neglected, and it is one of the reasons which makes me distrust Air Transport as a factor in world peace.

All sorts of little lines in Europe, which were supposed to be nationally owned air lines or lines owned by nationals of each country, were also equipped and operated by Germans. Then when all the little German lines, and their extensions into foreign countries, were amalgamated in the great Luft Hansa under Milch, Wronsky, and Merkel, the German lines stretched out across a corner of Russia to Afghanistan, round West Africa to our Gambia Colony, across the South Atlantic down to Argentina and up to Venezuela, and were already running experimentally across the North Atlantic to New York. On top of which Luft Hansa was running the world's only airship line, which was an unqualified success until the burning of the *Hindenburg* at Lakehurst, near New York.

Pan-American Airways has just as romantic a story as the others, but it is along quite different lines. Young Mr. Juan Trippe's beginnings, how he first of all got down to Cuba, then across Central America, how he got a stranglehold on flying in one South American or Central American dictator-ridden State after another, how he raked in the Grace shipping people

and formed Pan-American-Grace on a fifty-fifty basis, and how, when with the pull of the Grace agencies he got command of the east coast of South America, he blocked his own partners of Panagra from flying into the United States from Central America, might very well be parodied by the Marx Brothers. Nobody else could do justice to it. And yet, in spite of its fantastic history, Pan-Am and Panagra are two, or one, of the best-run air-lines of the world.

I say nothing here about the great U.S. internal air lines, because I do not think that they are going to affect the Air Transport of the British Empire, for the good reason that our own air lines are never likely to do business inside the United States, except to the extent of being allowed to alight at coastal or frontier airports, to set down or pick up passengers. I certainly cannot see a trans-U.S.A. British Imperial air line taking a short cut across the United States to any possession which may be left to us in the Pacific. And I doubt whether, after the Good Neighbour has swallowed all the Good Naboths, we shall be allowed to do more than touch at coastal airports in South America. Nevertheless the history of those trans-continental and western airways before T.W.A. was invented, is as full of heroism as that of any of the great European or Asiatic or African lines.

But all those phases of Air Transport in the past ought to be studied in detail if one is to appreciate the problems before us in the future, because, as I have said before, history is the greatest plagiarist in all literature, but it seems to have an infinite variety of ways of repeating itself.

One of the best things that has been written about Air Transport is an article called "Civil Aviation Problems," by Major-General Sir Frederick Sykes, M.P., which appeared in *The Sunday Times* on February 11, 1945. We have heard little about Sir Frederick Sykes in air affairs for a good many years past, and yet there are few people better qualified to write on the subject.

He was one of the very earliest of Service aviators, for he took his Aviator's Certificate No. 95, dated June 20, 1911, on a Bristol biplane at Boocklands. He was the first Commanding Officer of the Military Wing of the Royal Flying Corps in 1912. He served right through the War 1914-18. He was Chief of the Air Staff from April, 1918, to the end of

that war. He was the first Controller-General of Civil Aviation in 1919, and he held that job till the flop in Air Transport obliged the Government to step his job down to that of a mere Director.

I was told by his close friend, Captain Herbert Wood, the founder of the air activities of Vickers, Ltd., that as a young officer of Hussars, Frederick Sykes became one of the very few men who have walked from Pekin to Simla (Northern India, in case you did not know) so he knows quite a lot about our gallant allies, the Chinese, and their possibilities as a market to be served by Air Transport in the future. After his spell in Civil Aviation in this country Sir Frederick was Lieutenant-Governor of Bombay for the statutory time. With that experience he is certainly entitled to talk about the problems of Air Transport, so I make no excuse for quoting him at length.

One of the first problems which he states is, "A decision must be reached on such questions as the B.O.A.C., the requisite number of air line companies, and subsidies and monopolies."

Everybody will agree there. One of the things that was then hanging up British progress in Air Transport was the indecision of the Government, and the refusal of the War Cabinet to give a straight answer to the questions of all those who have ambitions to run air lines or Air Transport in any form. And the confusion was still worse confounded by the Conferential Babels at Chicago, Ottawa and Montreal.

An interesting point is that Sir Frederick puts the question of our own set-up in front of this paragraph, "Next, after the formulation of a Commonwealth air policy, we must come to definite understanding with our Allies on essential questions, like the freedom of the air, the use of air ports, the regulation of flying by an international Board of Control, and the sharing of air traffic. Finally, an air agreement between the United Nations should be the first step towards an International Air Board, regulating, not operating, the air traffic of the world." Not operating, you will note. Sir Frederick is evidently not an International Socialist.

As showing up the mess in which air affairs stood bogged to the knees, or perhaps one should say to the undercarriage hinges, when this book went to press, this paragraph of Sir Frederick's is worth quoting as, I think, a piece of pure irony.

"It is satisfactory to learn from the Minister of Aircraft Production that in future the Minister for Civil Aviation is to be in control of his department, and, as far as the question of aircraft is concerned, he will be in the same position as the Secretary of State for Air or the First Lord of the Admiralty. But the statutory control of Civil Air Transport, including such crucial matters as funds, staff and organisation, is still vested in the hands of the Secretary of State for Air. Civil Aviation is to continue to share with the Service Department whatever is going."

There you have another phase of our own private Civil War in the air on which I have not hitherto touched. Anybody who has had anything to do with Government departments knows how every department squabbles with every other department, and how, in their excessive loyalty to their department, many Civil Servants who are honest and upright and God-fearing men in their private lives will, without a qualm of conscience, metaphorically knife anybody in the back who belongs to another department or who thwarts their own departmental ambitions.

If anybody can make any sense out of a Government policy such as Sir Frederick has stated in that paragraph, he ought to be head of the Mental Department of the Ministry of Health or of Scotland Yard.

Sir Frederick points out, farther, that "research work, which is vital to successful commercial aviation, cannot adequately be undertaken by a Service organisation." And he adds, "If this is neglected, competition with the energetic and adventurous American air lines will be hopelessly handicapped. We shall also be handicapped by the shortage of men with air operational experience."

There I disagree from him, because we shall have, as I have said elsewhere, masses of air crews and ground crews released by demobilisation from Air Transport Command, or possibly specially demobilised to join whatever air lines may start before general demobilisation breaks out. And as most of the Air Transport Command organisation and training has been done under very experienced officers and men who served with the old Imperial Airways, and as the Transatlantic Ferry was started and organised, and originally staffed, by George

Woods Humphery, who built up Imperial Airways, I do not think that we shall be so badly off as Sir Frederick fears.

Also, I think that possibly when he wrote that article he was not fully informed about the aircraft which are already flying or were to be flying before the end of 1945. He refers to the Avro Lancastrian and says, "It is really impossible for a converted bomber to compete, as regards comfort or efficiency, with up-to-date American air liners, and it should be regarded as nothing but a stopgap."

That is quite true, but the Avro York, which was produced as a stopgap, by the simple process of sawing the aft part of the fuselage off a Lancaster and sticking on a sort of box-car body, has proved itself to be a better job than the much-boasted so-called "Skymaster" or Douglas DC.4. And the Lancastrian has proved itself to be very much faster and more efficient than the York. Although it carries fewer passengers it has a much greater range. And beyond that, the Tudor I and Tudor II, which were already flying by the end of 1945, have proved themselves to be very much better than the Lancastrian.

So I cannot see any U.S. Air Transport machine which was as good at the beginning of 1945, as were the Tudors, and I cannot foresee any U.S. transport machine which is likely to be better in 1946 than the machines which we shall have then. And here we shall do well to remember, what I have said before elsewhere, that at no time throughout the war has there been in any category of aircraft a U.S. machine which was better than the best British aircraft in the same category.

Moreover, this development by the Avro Company, and also the development of the Hermes by the Handley Page outfit, has been done so quietly, though without any pretence of secrecy, that very few people knew that such progress had had been made when these aircraft were made known in the Press to the public. Before they were so made known there was a lot of grumbling among newspaper people, especially the technical Press and the Air Correspondents of the newspapers, about the way in which the Ministry of Aircraft Production forbade the publication of anything about the newer types. I should never attribute to M.A.P. such a high order of intelligence or subtlety as would keep the facts dark so

that they might suddenly be released at precisely the right moment to startle the world. But, in fact, that was what did happen.

When the information came out it burst like a dam and surprised our people in this country and considerably shook our Gallant Allies, who had been contemplating and planning for something like the control of the world's Air Transport. And a still more surprising factor, which was not fully made known to the world, was that by the end of 1945 we should probably have far more first-class Air Transport machines available for possible British air lines than the air lines could operate. The number of Yorks which had been used by Air Transport Command before 1945 is quite surprising. And the number in hand, together with the number of Lancastrians, at the finish of that year was more surprising. Consequently both in men and material the British Empire was in a much better position than anybody expected.

That we should be in such a position will, naturally, be put down by our rivals—friendly or otherwise—as an example of that low cunning which has for centuries been attributed to British Diplomacy. Just because the honest and not particularly quick-witted British diplomat speaks the truth no foreigner ever believes him. We have won the epithet of Perfidious Albion, and we are generally regarded as most astute politicians and unmitigated liars just because the average foreigner cannot recognise the truth when he sees it or hears it. Only in South America, among the Naboth States, does the phrase, "Word of an Englishman," signify ultimate truth—which is rather a pity if the commercial application of the U.S. Monroe doctrine is to cramp our style in South American trade in the future.

But let us return to Sir Frederick Sykes. Writing about Boa, he said, "This is a Government monopoly, which by its mere existence will militate against free enterprise. And there is no field in which the encouragement of regulated competition and private initiative is more to be desired. In any case, the B.O.A.C. will require complete reorganisation, and no vested interest must be allowed to obstruct."

There Sir Frederick openly proclaims himself, according to the views of some political parties, as a Reactionary, a

Conservative, an Individualist, and everything else which is opposed to that National Socialism which, in the air at any rate, has taken possession of Canada and Australia.

On this subject I have no fixed convictions. But certainly B.O.A.C. will need to be reorganised, and there will have to be some sort of competition to keep it up to its collar. Precisely what vested interests are indicated by Sir Frederick Sykes is not clear. As I have said before, B.O.A.C. is not a Public Company, so the Directors cannot be heckled or ragged or bullied at an Annual Meeting. It is not directly under Government control, so the Minister of Civil Aviation can disclaim responsibility as emphatically as did Pontius Pilate. Moreover, nobody can question him in the House about its possible misdeeds.

I have for long had a suspicion that if private enterprise were abolished under a Totalitarian or National Socialist or Communist or Fascist Government, strong individualists would, nevertheless, kick their way to the top through the mass of unenterprising bureaucrats, playing for safety. Imagine this country as a Totalitarian State for the past hundred years. Is there not a possibility that Mr. Carter and Mr. Paterson and Mr. Pickford might have been Kommissars of Road Transport; and that Lord Ashfield and the late Mr. Frank Pick might have been Kommissars of Passenger Transport; that Mr. Cunard and Mr. Ellermann and Mr. Booth and Mr. Holt and Mr. Elder and Mr. Dempster might have been Kommissars of Shipping; that Mr. Swan and Mr. Edgar and Mr. Harrod and Mr. Selfridge and Mr. Lewis and Mr. Peter and Mr. Robinson might have been Kommissars and Sub-Kommissars and Deputy-Kommissars for the distribution of soft goods; that Sir Ernest Benn, that great leader of Individualists, might have been Kommissar of the publishing business; and that Lord Perry and Sir William Rootes and Sir Miles Thomas, and, before them, Lord Austin and Lord Nuffield, might have been Kommissars of motor production? I sometimes have a feeling that strong individualists might be better employed in the nation's interest kicking bureaucrats than in cut-throat competition with one another.

Be that as it may, Sir Frederick is right when he says, "What we require in order to make use of our principal asset, our Empire air bases" (we have all the best bases in all the

best places, if you remember) "is at least five or six new inter-linked organisations operating in conjunction with Dominion air lines."

Whether there need be any difficulty in privately run air lines linking up with nationally socialised air lines is not obvious. After all, our shipping lines have for years worked amicably with the State-owned railways (shocking things they were, too) in France, and in Germany (where they were good).

Another of Sir Frederick's statements is particularly worth noting. He says, "Properly organised, and with the help of postal fees, liberal grants for research, and the maintenance by the Government of airports, communications and radio and meteorological services, such lines should be able to 'fly by themselves' without subsidy, admittedly an evil to be avoided."

There you have, I believe, the key to the whole position. In 1919, Mr. Churchill, then doubling the part of Air Minister and War Minister, announced that "Civil Aviation must fly by itself." It has never done so except as a freight service in special conditions. But there is no more reason why self-supporting air lines should be subsidised if free airports and air routes are offered to them, than that road transport undertakings should be subsidised when the roads are free to all — I tactfully avoid any discussion of the fact that motor taxation not only pays for all road upkeep and extensions, but is robbed annually by the Chancellor of the Exchequer of millions which are spent in that peculiar combination of recklessness and meanness which is characteristic of our Treasury.

Sir Frederick emphasises the point that BoA should "remain as one of five or six organisations each working its own lines under the regulation of the Ministry of Civil Aviation. By this system it would be possible to compare the results obtained by each; no such helpful comparison is possible when the only competition is with foreign countries."

He also argues, justly, that "although co-ordination should be achieved there should be no financial links between the B.O.A.C. and the various other companies. Unless the various air lines concerns are independent of one another throughout their structures the essential yardstick of efficiency, technically, commercially, and operationally, can never be achieved."

There is one fact to which Sir Frederick draws attention which is not properly understood, namely, that a Commercial Air Transport Council, with Headquarters in London, was set up as the result of the conversations at Montreal after the Chicago Conference. The astonishing thing is that a Commonwealth Parliament has not been set up, which would meet alternatively in London, Ottawa, Canberra, and possibly some day, when India comes to its senses, in Calcutta or Delhi.

There you have, I feel that you will agree, a very clear statement of the problems which are before us, and a useful programme for those whom it has pleased the Government to set in authority over Air Transport.

Practically every one of those problems turned up during the twenty years between wars. They were all solved easily and amicably by the various international meetings of the Air Transport organisations of the different countries. There was never any question of international control. The job was all done by international agreement. And I am certain that all future problems can be solved in the same way.

People imagine that there is a terrific difference between air war to-day and air war in 1918. In fact, there is precious little difference. The difference is in degree and not in kind. Grey-headed, portly, some successful and some not so successful, business men, now perhaps a little past middle-age, and some of them in early middle-age, were doing, thirty or so years ago, what the youngsters of to-day have done. They were dropping bombs at night, and in the daytime, over heavy *flak*. They were machine-gunning troops and transport on the roads, they were dropping bombs from low levels on railway lines. They were bombing factories in Germany. They were trying to bomb the Kaiser's Headquarters. They were even using rockets against enemy balloons. They were patrolling the hard, inhospitable ocean in flying-boats and float-planes, and land-planes, and blimps in search of enemy submarines. Incidentally, they did it all without parachutes, without dinghies, without parachuted lifeboats, without Radio-location, and without a lot of other things which make air war to-day more terrible and yet less trying.

In proof of which statement I would point out that the R.A.F. and the Dominions Air Forces have been built up on the assumption that casualties would be in the same proportion

to the people in the air as they were in 1914-18. And we have found ourselves at the end of the war with far more air crews than the Air Forces can use, with the result that youngsters whose ambitions have been pinned on getting into the Air Force were being sent into the Army or sent down the mines, with a markedly evil effect on enthusiasm for flying.

So I end by suggesting that these problems of Air Transport in the future, which look so terrible from here, are, in fact, likely to work out in practice much as did those of 1919-1939, and that History will again repeat itself, and that if only people will study what happened in the history of the past, in Air Transport as in other things, they will be much better able to tackle the problems and the programmes of the history of the future.

And remember one last consoling fact. Even if we do find ourselves turned into a totalitarian State you can trust the Englishman, the descendant of generations of pirates, to wangle round any regulations. A friend wrote to me not long ago—"The Black Market is our only link with Democracy." That is so true. Nowhere has a man freedom to sell what he has to offer for whatever price a buyer is willing to give. I passed the witticism, or aphorism, along to an Admiralty Inspector friend of mine. He answered—"Such an idea is enough to make any Civil Servant turn in his groove."

THE END

